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NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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A Survey of German Trade

THE report on economic and financial conditions in Germany to June, 1928, by J. W. F. Thelwall, Commercial Counsellor, Berlin, with chapters contributed by C. J. Kavanagh, commercial secretary, Berlin (H.M. Stationery Office, 3s. 6d., pp. 253), has one curious feature. Its table of contents includes no reference to chemicals—the field in which for so long Germany stood pre-eminent. Potash is mentioned, metallurgy and engineering, fertilisers, coal, coke and lignite, but of chemical products as such there is no specific mention. The omission is surely significant.

The boom which began on the German home market during the second half of 1926 continued unabated into the first quarter of 1928. Striking evidence of the intense activity which prevailed throughout the country is furnished by all sections of industry. The output of coal and lignite was greater than in any other previous year. The production of pig iron, steel and rolling material considerably exceeded that of any year since the war. All branches of the textile industry were fully employed until October, 1927, and although there was a slight falling off then, the situation remained good until the end of the year. Transport reflected the

exceptional activity in industry. There can be no doubt that the financial results were also good, though in some cases not as good as the owners wished. In the iron and steel industry the results are reported to have been satisfactory. It is obvious that the very full employment that German industry as a whole enjoyed throughout the year must have reduced overhead charges very considerably in proportion to turnover and had a beneficial effect on financial results.

During 1927 there were no sensational combines such as those of the steel and chemical industries in earlier years, but the movement continued to such a degree among the lesser concerns that the year marks a further great advance in concentration. There were three or four small fusions in the chemical industry and a merger among the Lower Silesian coal mines. It was, however, in the finishing industries that the tendency showed itself particularly strong. The cartel movement in Germany was at a standstill during the period under review, and such changes as occurred were mostly in the expansion and organisation of existing cartels. Internationally, however, there was some development, the German and French chemical companies arriving at an agreement concerning uniform methods of production and sale.

Anglo-German trade, as represented by the report, presents the same picture as last year of increasing German exports to Great Britain and declining British exports to Germany. The bulk of our exports to Germany consists, as for many years past, of textiles, and protection, it is stated, is too high and competition too severe for us to be likely to succeed in establishing a really large market in other articles, at any rate, not to an extent that would appreciably effect the balance of trade between the two countries. In the opinion of the authors, however, the German market is one still worth watching. As wealth increases there will be better demand for luxury articles of high quality such as Great Britain specialises in. Wages, and with them prices, are steadily going up in Germany, so that chances of successful competition should occur with increasing frequency. Particular attention is directed to the possibility of opening up new business by granting attractive credit terms after proper investigation and under suitable safeguards. The difference between interest rates in Great Britain and Germany is still so great that opportunities under this head ought certainly to offer themselves. The advisability of keeping stocks in Germany to ensure prompt delivery is also emphasised.

By the end of the first quarter of 1928 the activity in the German home market showed a distinct falling off, but German industry, according to the report, has now grown sufficiently strong to resist any temporary setback without serious disturbance. There

is no reason, the authors state, to anticipate a real check to Germany's general progress nor to regard the reaction as more than the slowing down of a pace which was too hot to last.

The German potash industry continued to develop satisfactorily during 1927 and the first quarter of 1928, production in 1927 increasing by some 12 per cent. over the previous year. The German agricultural industry was the largest consumer. Export business did not on the whole come up to expectations. Chemical fertilisers, which in recent years have become such an important German industry, were offered at prices about 20 per cent. below pre-war level, and the Government, the banks, and the chemical industry itself, are eager to provide the farmer with credit for purchasing them. No details are available concerning the amount of potash drawn by the I.G. for the production of "Nitrophoska." The information about chemical developments generally is meagre compared with that of some previous reports, but occasional references are made to several points which it may be possible to notice more in detail in a future issue.

A Good Club

THE annual report and balance sheet of the Chemical Industry Club for the past year testify again to the quiet stability and usefulness of the institution. Mr. T. Miller-Jones, the honorary treasurer, records "another successful year." Without being encumbered by needless wealth, the Club finds itself with sufficient money to provide for all reasonable contingencies. The fact that nearly £15 has been written off for depreciation of furniture indicates that a considerable portion of the furniture is now owned by the Club. The reserve fund stands at £474. Of that amount £200 is kept in reserve to cover the guarantors under the lease from Whitehall Court, Ltd., and a considerable part of the remainder may be required for decorations, etc. The surplus balance on the year is £74 and the Club's resources are equal to all reasonable contingencies. Quite a sound and comfortable position, though the treasurer might even yet not be too proud to accept a handsome donation or two.

The report of the executive committee is equally satisfactory. Seventy-five new members have been enrolled during the year, a larger number than for many years past. On September 1 last the membership stood at 736 (428 town members, 246 country members, and 62 overseas members). The committee has accepted with much regret Dr. E. H. Tripp's resignation as hon. secretary and records its sincere thanks for his services during the past five years. The thanks of the committee are also offered to Professor Donnan, the retiring president, and to Mr. J. A. Williams, the secretary. For the coming year Lord Melchett has been nominated as president, a nomination on which the Club is to be congratulated, Dr. F. B. Dehn for re-election as chairman, Mr. A. J. Chapman as the new hon. secretary, another excellent choice, and Mr. T. Miller-Jones for re-election to the treasurer'ship. Mr. Coley, it is announced, has been elected a vice-president, a suitable acknowledgment of his devoted efforts in founding the Club. "In view," says the report, "of the satisfactory increase in membership,

the improved financial outlook, the refurnishing of the rooms, and the greater use now being made of the Club, the executive committee feels that the Club has entered on a new era of prosperity and hopes that every member will do his utmost to further its interests in every possible way." The result is satisfactory as demonstrating, not only the activity of the Club's management, but the soundness of its policy. From the start it has existed on its own resources, neither tied to nor dependent on any other organisation, at the same time friendly with all, occupying its own distinctive place and discharging its own special duties to the chemical industry. One could wish nothing better for it than a continuance in well doing.

Chemical Overseas Trade

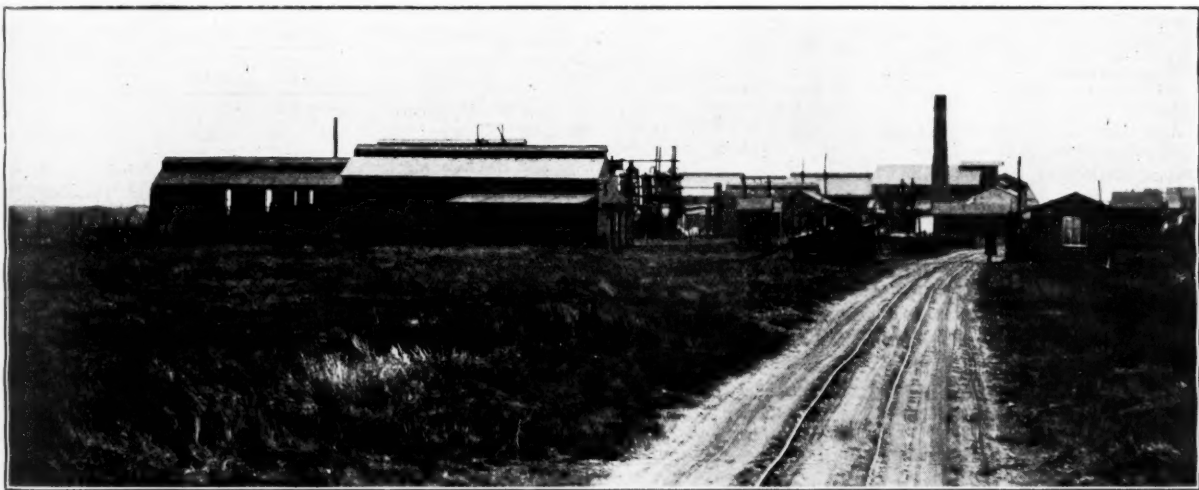
THE Board of Trade returns for September of chemical overseas trade are disappointing; they represent a momentary check in the steady development that has been noticed for some months past. In fact, taking the nine months of 1928, including September, there is an increase of £1,701,607 in chemical exports and of £55,452 in chemical imports. The increase in the September imports are mainly accounted for by a small group. Acetic and tartaric acid imports are both up substantially; borax imports have nearly doubled; coal tar products are £66,445 against £21,729 last year; in crude glycerine there is a startling increase from £2,078 to £46,623. On the exports side the sulphate of ammonia figures are again good, large increases being reported in the trade with Japan and other countries. There are no striking instances of decline, but there appears to have been a slight general falling off.

The Calendar

Oct.		
20	North of England Institute of Mining and Mechanical Engineers: General Meeting. 2.30 p.m.	Newcastle-upon-Tyne
22	Institute of Chemistry and Society of Chemical Industry (Edinburgh Sections): "Some Problems in Colloid Chemistry." R. Bruce. 7.30 p.m.	36, York Place, Edinburgh.
22	Institution of Chemical Engineers, Chemical Engineering Group and the London Section of the Society of Chemical Industry. Dinner. Discussion on the Recent Visit to Canada and the United States, to be opened by Sir Alexander Gibb and F. H. Carr. 7 p.m.	Criterion Restaurant, London.
23	Institute of Brewing (Scottish Section): "Surface Tension"—with Experimental and Lantern Demonstration. George A. Carse.	Caledonian Station Hotel, Edinburgh
23	Sir John Cass Technical Institute: Acid Elevators and Pumps, and Fans for Acid Gases. 7 p.m.	Jewry Street, Aldgate, London.
24	Institute of Chemistry (London Section): Exhibition of Apparatus and Chemicals.	30, Russell Square, London.
25	Institute of Brewing (Yorkshire and North-Eastern Section): "Some Practical Advantages to be Derived from the Adjustment of pH Values in the Brewery." D. McCandlish and G. Hagues.	Queen's Hotel, Leeds.
26	Institution of Chemical Engineers. "Fluid Jets and Their Practical Applications." Professor A. L. Mellanby. 6.30 p.m.	Lecture Theatre of the Institution of Civil Engineers, London.

A Fatal Explosion at an Explosives Works

THE PHOTOGRAPH ON THIS PAGE SHOWS A GENERAL VIEW OF THE WORKS OF EXPLOSIVE AND CHEMICAL PRODUCTS, LTD., BRAMBLE ISLAND, GREAT OAKLEY, NEAR HARWICH, WHERE A FATAL EXPLOSION OCCURRED ON MONDAY. THREE MEN AND TWO GIRLS WERE KILLED. SITUATED IN AN ISOLATED POSITION, THE FACTORY, WHICH IS STATED TO BE FRENCH-OWNED, IS USED CHIEFLY FOR THE PRODUCTION OF BLASTING MATERIALS. THE EXPLOSION OCCURRED IN A MIXING SHED NOT LONG AFTER WORK HAD COMMENCED, AND WAS FELT FOR MANY MILES AROUND. THE VICTIMS ARE: RICHARD COCKAYNE, CHIEF CHEMIST, AGED 35; ROBERT PITHER, AGED 33; JOHN SALLOWS, AGED 38; MARY JANE CLAYDON, AGED 20; LILIAN



MAUD LAMBERT, AGED 21. TWO GIRLS AND TWO MEN WERE WORKING IN THE SHED AT THE TIME, AND IT IS THOUGHT THAT MR. COCKAYNE WAS KILLED WHILE MAKING A TOUR OF INSPECTION. AFTER THE EXPLOSION THERE WAS A HOLE IN THE GROUND 15 FEET DEEP WHERE THE HUT HAD STOOD. THIS IS THE SECOND EXPLOSION AT THE WORKS FACTORY, ONE OCCURRING BEFORE THE WAR. AT THE INQUEST, WHICH WAS HELD ON THURSDAY, A VERDICT OF ACCIDENTAL DEATH WAS RETURNED.

THE PHOTOGRAPH INDICATES THE ISOLATED CHARACTER OF THE WORKS, WHICH AT HIGH WATER ARE CUT OFF FROM THE MAINLAND. NO VIEWS OF THE EFFECTS OF THE EXPLOSION ARE AVAILABLE, FOR THE REASON THAT PHOTOGRAPHERS WERE FORBIDDEN TO VISIT THE SITE BY THE POLICE.

Decline in September Chemical Exports

Increase of Trade in First Nine Months of Year

AN increase in the imports of chemicals, drugs, dyes and colours, and a decrease in exports and re-exports are features of the Board of Trade Returns for September. Imports for September were valued at £1,161,339, an increase of £69,706 over September 1927; exports were valued at £1,825,780, a

decrease of £217,505; and re-exports were worth £64,346, a decline of £80,507. On the other hand exports for the first nine months of the year at £18,867,606 show an increase of £1,701,607, while imports, valued at £11,408,717 are up by £55,452. The re-exports for the nine months are valued at £719,175, a decline of £33,946.

	Imports		Exports	
	Quantities Month ended September 30, 1927.	Value Month ended September 30, 1928. £	Quantities Month ended September 30, 1927.	Value Month ended September 30, 1928. £
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Acetic.....tons	883	1,077	37,338	47,008
Acid Tartaric.....cwt.	983	2,159	5,357	9,385
Bleaching Materials ..	15,249	8,139	10,850	9,397
Borax.....	8,028	18,703	7,704	19,093
Calcium Carbide ..	89,649	78,604	54,523	47,044
Coal Tar Products value	—	—	21,729	60,445
Glycerine Crude ..cwt.	541	23,403	2,078	46,623
Glycerine Distilled..	130	367	578	973
Red Lead and Orange Lead.....cwt.	4,368	2,728	7,585	3,707
Nickel Oxide.....	—	98	—	440
Potassium Nitrate (Salt-petre).....cwt.	10,105	6,584	11,095	6,718
All other Compounds ..	263,067	250,460	80,366	77,451
Sodium Nitrate ..	139,739	143,322	81,420	79,245
All other Compounds ..	30,405	38,321	17,426	28,900
Tartar, Cream of..	2,739	2,953	11,742	13,007
Zinc Oxide.....tons	1,052	830	32,786	24,818
All other Sorts.....value	—	—	213,801	188,984
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts.....oz.	272,923	140,368	20,257	10,265
Bark Cinchonacwt.	92	1,169	479	6,433
Other Sorts.....value	—	—	145,986	101,625
DYES AND DYESTUFFS, ETC.—				
Intermediate Coal Tar Products.....cwt.	119	130	1,631	1,087
Alizarine.....	43	51	1,802	2,002
Indigo, Synthetic..	—	—	—	—
Other Sorts.....	3,715	2,998	84,752	72,541
Catch.....	3,294	4,050	5,748	6,767
Other dyeing extracts.....	2,724	3,960	9,256	11,219
Indigo, Natural ..	41	—	926	—
Extracts for Tanning ..	66,216	101,072	63,663	121,664
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground, and Blanc Fixe.....cwt.	56,211	46,283	12,189	10,072
White Lead (dry) ..	9,156	11,640	13,559	18,162
All other Sorts.....	99,478	105,143	135,007	135,511
Total of Chemicals, Drugs, Dyes, and Colours.....value	—	—	1,091,633	1,161,339
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Sulphuric....cwt.	1,770	7,043	2,351	3,594
Acid Tartaric ..	2,832	2,144	18,931	13,930
Ammonium Chloride (Muriate) ... tons	716	307	14,530	6,314
Ammonium Sulphate—				
To Spain and Canaries tons	9,525	7,339	89,596	68,535
„ Italy ..	210	175	1,984	1,635
„ Dutch East Indies tons	1,537	127	14,896	1,221
„ Japan ..	8,505	13,206	81,163	124,707
„ British West India Islands and British Guiana tons	682	730	6,352	6,731
„ Other Countries ..	7,147	13,867	72,399	130,926
Total	27,606	35,444	266,390	333,755
BLEACHING POWDER (Chloride of Lime)	30,007	40,992	11,065	14,244
COAL TAR PRODUCTS—				
Anthracene	216	—	146	—
Benzol and Toluol.galls.	860,271	709,325	48,405	49,212
Carbolic Acid.....cwt.	15,098	14,310	29,455	24,092
Naphtha.....galls.	5,056	6,543	432	913
Naphthalene.....cwt.	268	7,904	264	2,853
Tar, Oil Creosote Oil, etc.				
galls.	4,412,574	3,108,868	154,036	100,886
Other Sorts.....cwt.	66,532	63,559	36,552	35,535
Total	—	—	269,290	213,791
Copper, Sulphate of..tons	416	609	9,634	14,381
Disinfectants, Insecticides cwt.	35,837	32,034	88,479	79,850
Glycerine, Crude ..	1,986	90	5,918	257
Glycerine, Distilled..	5,506	8,089	27,321	24,873
Total	7,492	8,179	33,239	25,130
POTASSIUM COMPOUNDS				
Potassium Chromate and Bi-chromate,cwt.	2,372	1,988	4,373	3,525
Nitrate (Salt-petre)..	2,045	1,382	3,075	2,693
All other Sorts..	7,356	1,720	16,164	12,400
Total	11,773	5,099	24,212	18,618
SODIUM COMPOUNDS				
Sodium Carbonate..	463,478	311,210	141,979	85,233
Soda Caustic.....	180,527	120,520	126,805	81,518
Sodium Chromate and Bi-chromate,cwt.	2,280	2,927	3,240	3,994
Sulphate	253,783	164,663	20,465	19,012
All other Sorts..	60,360	40,308	67,504	34,787
Total	960,428	639,628	368,993	224,544
Zinc Oxide	98	102	4,284	4,069
CHEMICAL MANUFACTURES, ETC., all other sorts value	—	—	289,455	279,457
Total of Chemical Manufactures and Products (other than Drugs and Dyestuffs) value	—	—	1,400,853	1,231,677
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts	128,223	211,514	13,934	18,549
All other Sorts.....value	—	—	233,007	215,212
Total	—	—	246,941	233,761
DYES AND DYESTUFFS—				
Products of coal tar cwt.	8,066	6,359	63,865	50,377
Other Sorts.....	5,431	8,085	5,931	7,634
Total	13,497	14,444	69,796	58,011
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground, and Blanc Fixe.....cwt.	714	2,765	405	1,652
White Lead.....	5,417	3,139	10,177	6,075
Paints and Colours ..	49,258	37,589	102,363	74,406
Paints and Enamels Prepared (including Ready Mixed)	32,719	39,411	104,589	132,849
All other Sorts	55,537	48,590	108,161	87,349
Total	143,645	131,494	325,695	302,331
Total of Chemicals, Drugs, Dyes and Colours.....value	—	—	2,043,285	1,825,780

Re-Exports

	Quantities.		Value.	
	Month ended September 30, 1927.	Month ended September 30, 1928.	Month ended, September 30, 1927.	Month ended, September 30, 1928.
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Tartariccwt.	100	73	732	598
Borax.....	30	510	30	534
Coal Tar Products. Value	—	—	543	12
Potassium Nitrate (Salt- petre)cwt.	61	74	101	98
Sodium Nitrate ... "	1,214	628	724	323
Tartar, Cream of ... "	503	256	2,212	1,290
All other sorts....value	—	—	86,101	13,020
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts oz.	24,685	22,163	2,668	2,197
Bark Cinchonacwt.	200	144	789	552
All other sorts....value	—	—	39,138	31,779
DYES AND DYE STUFFS—				
Cutchcwt.	1,027	1,287	1,593	2,120
All other sorts "	266	262	1,893	1,240
Indigo, Natural.... "	7	40	235	983
Extracts for Tanning cwt.	1,305	1,008	1,752	986
PAINTERS' COLOURS AND MATERIALS.....cwt.	1,595	2,237	5,478	8,590
Total of Chemicals, Drugs, Dyes and Colours ...value	—	—	144,853	64,346

Industrial Chemistry and the Universities

Professor Kendall's Inaugural Lecture at Edinburgh

THE great increase in chemistry students in America, and the drain made by big industries upon University staffs were touched on by Professor J. P. Kendall, the new Professor of Chemistry at Edinburgh, the successor to Sir James Walker, in his inaugural lecture on Wednesday, October 10.

Professor Kendall said that American Universities during the last eight years had turned out more than 1,600 Ph.D.'s in Chemistry. The Departments of Chemistry in America were simply flooded with students. There were so many branches of chemistry that many of the American Universities had made chemistry a Faculty in itself, while others had made a Faculty of chemistry and physics combined. A great many of the students fell by the wayside. Those who could not keep up a certain standard were simply asked to leave and make way for those who could work more successfully. Still, a great many of them did finish. Some of them went into teaching, some into research institutions, but most of them went into the industries. The necessity of having trained chemists as distinct from routine chemists in the industries was recognised more generally in America at an earlier period than in this country. The demand for chemists was greater than the supply, and the chemical industries found that in order to secure chemists they had to pay to young Ph.D.'s salaries as high as those given to the lecturers in the Universities. A bright idea recently occurred to the industries—"Why should we take a beginner when we can get the teacher?" During the last few years the departments of chemistry in America had been seriously depleted of their most prominent lecturers and professors. If the Universities were to be left only with inferior teachers, then the next generation of students would receive inferior training. The industries had to recognise that contact between the Universities and the chemical industries must be reciprocal. At present the industries took the product of the Universities and gave no return. In America the problem was beginning to be solved by the scientific staffs of the large industrial laboratories supporting the Universities by assisting in the education of the students.

B.B. Medals for Fruit Growing

In addition to presenting two gold medals as special awards at the Imperial Fruit Show, opened in Manchester, Friday, by Prince Arthur of Connaught, *The Fruit Grower* (one of Benn Brothers' publications) has organised a "Growers' Day," comprising two conferences and a luncheon (with Sir Ernest Benn in the chair), for October 25. A special message to the industry has been issued through *The Fruit Grower* by the President of the show (Sir William Lobjoit).

The Catechin Problem

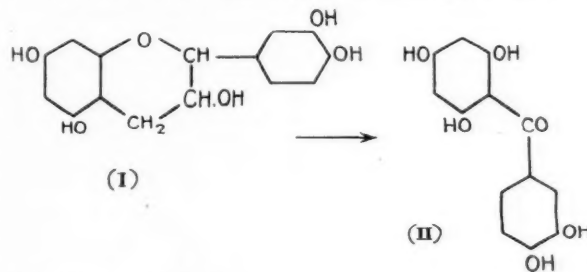
To the Editor of THE CHEMICAL AGE.

SIR,—In spite of the fact that Professor R. Robinson (p. 337) objects to my statement "that the constitution of cyanidin is still *sub judice*" (p. 291), he has deemed it advisable to submit his work to "a celebrated continental organic chemist," for confirmation. This marks a welcome advance in the discussion, and one must look forward with interest to the verdict of this unknown judge.

But why go abroad? It is now generally agreed that Willstätter's well-defined yellow oxidation product is of crucial importance to the whole question. This product is given by the natural and not by the synthetic cyanidin. Dr. Malkin is prepared to demonstrate this before the Chemical Society, providing Professor Robinson agrees to produce at the meeting one gram of his synthetic cyanidin for a simultaneous oxidation experiment. Each oxidation does not require more than five minutes.

I note Professor Robinson refers to our work as "the Malkin-Nierenstein bogey." If this bogey worries him, Professor Robinson has only himself to blame. In March, 1927, I informed him personally of our results, and suggested a joint comparison of our specimens, either at Manchester or at Bristol. I also suggested May as a suitable month for the meeting at Manchester, as Willstätter would then have been able to join us in our efforts to solve our difficulties. All these suggestions were firmly declined by Professor Robinson, with the result that I was forced to publish our observations.

As regards the Perkin formula (I) for catechin I have nothing to add to what I have already said. Even the ingenious suggestion, put forward by Professor Robinson, that the production of maclurin (II) from catechin, is due to a



"double benzil-benzilic acid rearrangement," will not save the Perkin formula. I am, etc.,

The University,
Bristol.

M. NIERENSTEIN.

To the Editor of THE CHEMICAL AGE.

SIR,—With reference to Professor Nierenstein's criticisms of my resumé of the present state of our knowledge of the chemistry of catechin ("The Catechin Problem," *J. Soc. Chem. Ind.*, xlvii, 1928, No. 38, p. 269 t.) I wish to state that Professor Robinson has kindly sent me a copy of a letter addressed to THE CHEMICAL AGE in which he has replied to the points raised by Dr. Nierenstein. I will, therefore, refrain from attempting any further answer.—I am, etc.

Dyestuffs Research Laboratory, FREDK. A. MASON.
College of Technology, Manchester.

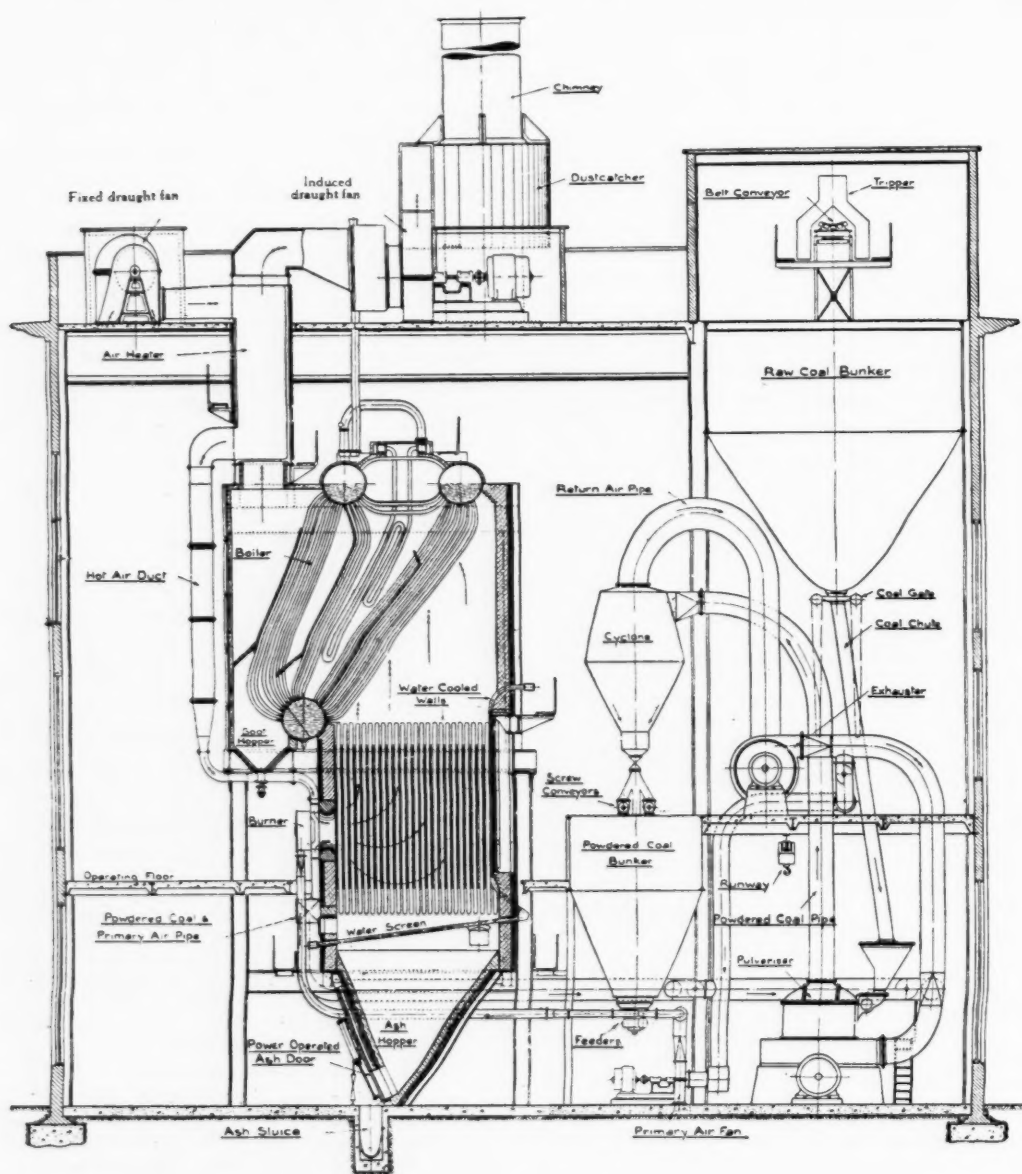
Major and Co.: Annual Meeting

THE annual general meeting of Major and Co., Ltd., was held at the Royal Station Hotel, Hull, on Friday, October 12. Mr. J. L. Major, presiding, said it had been a long and weary struggle to get the pigment dye department on a profitable footing and great credit was due to Mr. Darby, the manager of the department, ably assisted by a staff of qualified chemists. The profits were being used for the extension of the business. With regard to petroleum, he had explained on previous occasions why they had developed this side of the business. Unfortunately, there had been a prolonged and serious price warfare. As soon as a rise took place in the price of motor spirit to an economic level they should benefit considerably and it was imperative that, having entered into the business, they should make up their minds to see the matter through. The directors' report and accounts were adopted.

Recent Developments in Pulverised Fuel Practice

UNDOUBTEDLY one of the most striking examples of what may be termed combined mechanical and chemical engineering is the "Lopulco" system of pulverised fuel firing, only introduced on a large commercial scale in 1924. The first plant was the Lakeside Power Station, Milwaukee, and the growth has been so rapid that to-day a reasonable estimate is that over 75 per cent. of all the coal in the world consumed under steam boilers in the pulverised condition, probably 20,000,000

hot air through the "Raymond" pulverisers, an improved type of rotary feeder superseding the screw design, and the remarkable new short flame turbulent type "R" burner, with the flame complete in 10 ft. only instead of the usual 30 ft., allowing the burners to be installed at the front of the setting instead of the top, requiring therefore a much smaller combustion chamber, 30-50 per cent. less in cubic capacity. The latter is built up with water screens, "Murray-USco" fin tube



A TYPICAL "LOPULCO" PLANT.

tons per annum, is burnt on the "Lopulco" system. It is interesting to note, therefore, the latest design of the plant, such as will be installed at Synthetic Ammonia and Nitrates, Ltd., resulting from a unique practical experience, that of the consumption of at least 40,000,000 tons of coal and installations in many of the world's most famous power stations, as well as industrial establishments.

Expressed in a few words, this may be summed up as a much shorter over-all height of the setting, a new type of continuous, vertical, cylindrical, steam-heated rotary dryer with mechanical scrapers, or, alternatively, drying by passing

water-cooled 4 in. steel walls in series with the boiler under full pressure, water sluice ash conveying and no suspended arches, while air heating is employed for both the secondary and primary air, the latter going to the burner through the pulverisers, as stated. Further, a dust separator is fitted at the chimney base, through which the induced draught fans discharge, while the pulverising equipment and bunkers are now generally placed at the back of the boilers instead of over the top, to cut down the height still further.

As usual, each boiler is entirely independent, with its own pulveriser, cyclone, pulverised fuel bin, feeder, "R" burner,

air heater, dust separator and induced and forced draught fans, with separate control of adjustment of the pulveriser, feeder, and air supply for the burner. At the same time, in a line of boilers, the pulverisers and pulverised coal bunkers are so inter-connected for convenience or emergency that any individual boiler or number of boilers can be operated by different pulverisers, while the whole plant is operated under the control of a complete battery of scientific instruments.

The general advantages of the "Lopulco" systems are claimed to include up to 90 per cent. continuous thermal efficiency, ability to burn any quality of fuel, irrespective of ash and sulphur content, ease and flexibility of operation, and equal suitability for almost any size of boiler, right up to 500,000 lb. water evaporated per hour and over. The new arrangement is obviously a still further improvement, and the new "R" burner, for example, will take up to 150,000,000 B.Th.U. or 6 tons of coal per single unit, with air pressure not over 2 in. W.G. and control by a single damper.

Indian Chemical Notes

[FROM OUR INDIAN CORRESPONDENT.]

Royal Commission's Recommendations

The Royal Commission on Indian Agriculture, in their report which has just been published, have recommended that a definite programme of experiments should be laid down to ascertain, with all possible accuracy, the extent to which fertilisers can be used with profit. They consider this to be of such great importance that they recommend that the Council of Research should undertake the direction of investigations. Further, with a view to utilising oilcakes as manure, they advocate the extension of the oil-crushing industry. In regard to bonemeal, a thorough investigation of the economics of the bone-crushing industry is urged as a preliminary to the establishment of such mills by private enterprise. Regarding the prospects of sulphate of ammonia, the Commission hold the view that the price factor limits its application to the most valuable crops, such as sugar-cane and garden crops, and it is therefore unlikely to affect the small cultivator.

Inquiry Into Tariffs

The Government of India have received representations from the Eastern Chemical Co. and the Dharamsi Morarji Chemical Co. requesting that protection may be extended to the undermentioned chemicals: Sulphuric acid, hydrochloric acid, nitric acid, magnesium sulphate, ferrous sulphate, potash alum, aluminium sulphate, sodium sulphide, zinc chloride, copper sulphate and Glaubers salt. The Government have now decided to refer to the Tariff Board for examination these representations, along with any others of a similar nature which may be brought to its notice. Further, as chemicals are utilised as raw materials in certain Indian industries, the Tariff Board will also examine the question of the removal of import duties on such chemicals.

The Bengal Trade

The import trade in chemicals in Bengal rose from 161 lakhs in 1926-27 to Rs. 168 lakhs in 1927-28. The soda compounds were valued at Rs. 45 lakhs and sulphur at Rs. 13 lakhs, the latter being mostly supplied by Italy. In miscellaneous chemicals and other compounds the United Kingdom has the bulk of the trade.

The imports of drugs and medicines rose from 60 lakhs to 72 lakhs. This trade is steadily increasing. More than half the drugs still come from the United Kingdom, but whereas imports from all countries have increased, the growth is most noticeable in imports from Germany, which have risen from 5 lakhs to 11 lakhs in value.

Cement Developments

The Okha Cement Co. is a new enterprise started in Bombay to take over the works of the Dwarka Cement Co. and start manufacture as a fresh business. The latter company is now in liquidation. The factory is situated at Dwarka, a fair weather port. At a distance of 18 miles from the factory the Baroda Government have recently opened a new port, Okha, which lies midway between Bombay and Karachi, is the terminus of the Jamnagar-Dwarka railway, and has a pier built for berthing steamers. The factory will be in a position to start manufacturing cement by January, 1929.

The demand for cement in India has been steadily increasing. The present consumption, exclusive of Burma, is estimated at about 550,000 tons a year, against a consumption of about 360,000 tons in 1924. Even the present consumption of 550,000 tons must be considered very low for a country of the size and population of India when it is remembered that America, with only one-third of the population of India, consumes as much as 28 million tons of cement every year. The uses of cement are being better understood day by day in India by the people, and it is reasonably certain that the consumption must go on increasing from year to year. As the existing cement factories in India are not able to supply all the demand, about 60,000 tons are annually imported. The Okha Cement Works are designed to manufacture about 100,000 tons every year.

Scientific Pharmacy

Addressing the Pharmaceutical Society of India in Madras, Sir P. C. Ray, the famous Indian chemist, dwelt upon the need for scientific pharmacy in India, and stated that during the last 33 years he had himself been trying to prepare medicines according to the British Pharmacopoeia in India. He considered it a great reproach to the big cities of Calcutta, Bombay and Madras that no legislation existed, as yet, to compel the local druggists to encourage the services of duly qualified men. The Pharmaceutical Society consists of duly qualified pharmacists and druggists scattered throughout the country. Their object is to promote and safeguard pharmacy, and to raise the standard of pharmacists to that obtaining in other progressive countries.

Indian Mica Exports

Though it is true that India has practically a monopoly of mica, it is understood that considerable efforts are now being made in South Africa and other countries to market a better dressed and graded product, and should this be accompanied by the training of the cheap labour available in the art of making splittings, the Indian position in the trade would to some extent be threatened. In this connection, it may be mentioned that Mr. Hobson, of the Geological Survey, India, who recently visited the United States of America, considers that India should adopt modern machine drilling and deep hole blasting methods. These methods are also eminently suitable to India, because the mica within the Indian pegatites is much more scattered, and the danger of damage to the mica correspondingly less.

Sillimanite and Kyanite

A recent examination of the deposits of the refractory materials sillimanite and kyanite in India, carried out through the Geological Survey of India, has brought out the fact that India possesses far greater resources in these materials than any other country. In Assam, the least quantity available is put down at 83,000 tons, in Central India about 100,000 tons, and in Bihar and Orissa in the Singhbhum district about 300,000 tons. The actual quantities must be ten times more than this. Not all of these deposits are economically advantageous, but most of them are.

Forest Research Inquiry

The Government of India has decided to appoint a committee to inquire into the future activities of the Forest Research Institute, Dehra Dun, with a view to extending them and thereby making the Institute the finest of its kind in India or in the whole world. It is hoped that these increased activities will result in a greater utilisation of India's forest resources to the advantage of the industries of the country. The proposed committee will inquire firstly into the organisation, working and control of the Forest Research Institute at Dehra Dun, with special reference to the scientific and economic value of the work already done and the desirability or otherwise of periodical scrutiny in the future; secondly, into the need for ensuring co-operation, with a view to the achievement of scientific accuracy and to a better interchange of knowledge between inquiries in progress at the Institute and similar investigations abroad, especially in America and Europe and for ensuring suitable publicity of such results as are capable of utilisation for industrial purposes; thirdly, into the system of recruiting staff, especially technical experts; and lastly, into the system of training Indians for scientific research, and to make recommendations. S. G. W.

The Teaching of Chemistry

A Paper by Professor Smithells

A MEETING of the Manchester and District Section of the Institute of Chemistry was held on Thursday, October 11. A paper entitled "Past and Present in Chemical Teaching—Some Recollections of a Manchester Student," was read by Professor Arthur Smithells, F.R.S. Professor L. Guy Radcliffe presided.

Professor Smithells stated that he began the university study of chemistry at Glasgow, where his father was then resident, but at the end of a year he was drawn to the outstanding school of scientific chemistry which had been established by Professor H. E. Roscoe at Owens College, Manchester. There, very near his birthplace, he spent five years as a student, and found that the Owens College school of chemistry fully deserved its reputation. In thinking of those days one was reminded, above all, of the wonderful and endearing personality of Roscoe, and the decisive influence of his labours on the fortunes of Owens College.

Chemistry in the Last Century

Professor Smithells gave an account of the teaching of chemistry at the time in question, the late 70's and early 80's of last century. He thought it had been a relatively dull phase in the history of the science, and that the state of its theory made the difficulty of rational teaching very great. Commenting on the chief changes to which chemical teaching had been subjected by the extremely rapid advances of the science, he said that the last advance, following upon the stupendous discoveries relating to the atom, promised ultimately to simplify the teacher's task in a very great degree, but at the moment the university teacher was confronted by very great difficulties.

The immense accumulation of facts, the great theoretical developments, the innumerable new applications of chemistry, and the demand that the chemist should be equipped with much knowledge outside chemistry, including, in particular, mathematics, presented to the teacher a most serious and difficult problem. It was now a common complaint that the university courses were in many cases much too congested, and that far too great a burden was put upon the student, and especially upon his memory. One result of the congestion was that a type and amount of chemistry teaching was being forced upon the schools which many people thought wrong both for the schools and for the universities. He knew, however, that there was a wide divergence of opinion on this subject among university teachers.

A Conference Suggested

Another complaint frequently heard to-day was that whilst students were found to be wonderfully learned about more recent developments of chemistry, they were apt to be lacking in simpler knowledge, and especially in relation to that part of the subject still known as inorganic chemistry.

Prof. Smithells said he was endeavouring to state facts and to avoid expressing opinions of his own, for he knew how prone elders were to complain of the present, and how much their opinions were attributed to an inability to live up to the times. But without expressing personal opinions on matters of detail, he was satisfied that the present situation was unsatisfactory, and he believed that good might come of a serious conference among those charged with the duty of the professional training of chemists. He hoped very much that the Institute of Chemistry might be the place in which such a conference would be held.

I.G. Progress

THE general prospects of the I.G. Farbenindustrie were stated to be favourable at the half-yearly meeting which was held at Bitterfeld on Friday, October 12, and a good dividend may be expected. Production and sales have increased as compared with last year. The export trade, especially that of dyestuffs to the Far East, has been favourably developed. The export of pharmaceutical products is also progressing well. Good business and increased activity were reported in the manufacture of light metals for motor-cars and aircraft. The sale of artificial silk was considerably higher than that of last year, and artificial silk works at Dormagen, which are capable of a daily output of 5,000 kilogrammes, are now beginning production.

Dr. Hatfield's American Tour

Delivery of Memorial Lecture

By the courtesy of the American Society for Steel Treating, Dr. W. H. Hatfield, Director of the Brown-Firth Research Laboratories in Sheffield, delivered this year's memorial lecture to the late Professor Edward de Mille Campbell, at Philadelphia, on Wednesday, October 10.

The late Professor Campbell early in his career organised the Department of Chemical Engineering at the University of Michigan. His contributions to scientific literature number some seventy-seven papers; the earlier ones dealt with Portland cement and problems of analytical chemistry, while later his attention was directed to the correlation of the chemical and physical properties of steel, regarding which he wrote about forty-four original monographs, twenty of the latter being contributed to the Iron and Steel Institute. Professor Campbell was a member of the Iron and Steel Institute, the Faraday Society, the American Chemical Society, and the Washington Academy of Sciences, and an honorary member of the American Society for Heat Treatment.

Science in the Steel Industry

In his lecture, Dr. Hatfield chose for his subject "The Application of Science to the Steel Industry," and the lecture reviewed generally the recent developments of the metallurgy of iron and steel. Amongst other things with which Dr. Hatfield dealt were certain problems arising in connection with the production of steel in melting and casting operations, and in the various subsequent stages of manipulation, including a review of the work carried out in this country by the Ingot Committee of the Iron and Steel Institute.

Having discussed problems in connection with the forging and heat treatment of various classes of steel, he went on to deal with the latest developments in corrosion and acid-resisting steels, in connection with which he himself has done much work. He reviewed also the position with regard to steels employed at medium and at high temperatures, discussing the properties of special steels devised to meet these conditions, and special methods of testing. Other aspects of the uses and properties of steels which were dealt with were magnetic and non-magnetic characteristics, wearing qualities, and the properties required in cutting and other classes of tools.

The lecture coincides with the National Metal Exposition which is being held in Philadelphia, and Dr. Hatfield will deliver some twenty lectures at various American universities and steel manufacturing centres.

U.S. Government and the Kina Bureau Settlement

By a "consent decree" of the United States District Court for Southern New York, the conflict between the Kina Bureau (the quinine producers) and the U.S. Government has been ended. It is agreed that all quinine producers, whether American or otherwise, are forbidden to require restrictions on the re-sale of quinine in the United States, or to hinder the sale or despatch of quinine bark or quinine derivatives in, to or out of the United States, or to participate in agreements for the division of profits or sales areas in the United States, or to make distinctions between buyers in the United States, or to sell on condition that the buyer does not deal with the competitors of the seller. All agreements concerning the sale of quinine and quinine bark in the United States in so far as they infringe the anti-trusts laws, are deprived of force. The following firms, states the *Kölnische Zeitung*, have subscribed to these arrangements: Dutch—N. V. Amsterdamsche Chininefabriek, N. V. Bandoengsche Kininefabriek, N. V. Nederlandsche Kininefabriek, Arent Roalf Van Linge, Pieter Hajonides Van Der Meulen, S. Van Velzen Camphuis, and J. F. W. Sieger; Swiss—Hoffman-La Roche and Co., Emil Barrell, and Henri G. Senn; Japanese—A. G. Hoshi Pharmaceutical Co., Ltd.; German—C. F. Boehringer und Söhne G.m.b.H., Chininfabrik Braunschweig, Buchler und Co., and Vereinigte Chininfabriken Zimmer und Co. G.m.b.H.; French—Société du Traitement des Quinquinas, A. Taillandier, Pointet et Girard, and Pharmacie Central des Pharmaciens de France; British—Howards and Sons, Ltd. and R. W. Greef and Co., Ltd.; United States—Merck and Co. Inc., New York Quinine and Chemical Works Inc., R. W. Greeff and Co., Inc., Mallinckrodt Chemical Works Inc., Hoffmann-La Roche Chemical Works, Inc., Robert H. De Greef, and Elmer H. Bobst.

Tin or Glass for Preserved Foods

Risks of Poison Exaggerated

THE respective advantages and dangers of canned and bottled preserved foods was discussed before the Plymouth Rotary Club on Friday, October 12, by Mr. C. E. Gill, analytical chemist, Devonport. On a rough estimate, he said, about five million cwt. of canned goods were imported into this country in 1927, and about 130,000 cwt. of canned goods manufactured here were exported. The canning industry originated through the offer of a bounty of 12,000 francs by the French Government during the Napoleonic wars for some improved method of preserving foods, thus reducing the waste in naval and military stores. The art owed its wide extension in the United States of America to the demonstration of the utility and safety of such preserved foods during the American Civil War. The French prize was awarded in 1810 to Nicholas Appert, who had been experimenting with more or less success since 1795. His method was to pack the products in glass bottles, cover them with water, and then heat the corked bottles in an open water bath for a length of time depending upon the character of the food. Although to-day's practice differed materially from this, the principle was sound and modern developments were chiefly advances in detail and technique.

Effects of Sterility

The prevailing view, both scientific and popular, in regard to canned foods was that they were types of preserved foods which remained sound because the food was rendered sterile by heat and maintained in that condition by being hermetically sealed. When canned foods became unsound the explanation offered was either that the sterilisation was inadequate or that the continuity of the tin was defective, admitting bacteria from the outside air, which decomposed the food. A detailed examination of perfectly sound samples had shown, however, that about 40 per cent. were not sterile. The percentage varied from 18 per cent. in unsweetened milk to 84 per cent. in fish and 100 per cent. in sweetened milk. In relation to food-poisoning outbreaks, canned foods took their share, but not an undue share, as vehicles of infection. The development of poisonous substances was accompanied by a gas formation which tended to bulge the tins, giving rise to "blown" tins which acted as danger signals. On the whole, there was little evidence that tainted food was poisonous, as it was only in the last stage of putrefaction, when the food was far too nasty to be eaten, that poisonous products were formed. The danger of poisoning from tinned foods lay in the solution of the tin by the food contents. Fruit, meat extracts, and some fish foods were all liable to contain considerable amounts of tin. Tin, however, was unimportant as a cause of illness unless very old tinned goods were sold. The general conclusion was that while tinned goods had definite and special risks, they were not large risks, and were for the most part easily guarded against. The only chemical danger with glass containers lay in the presence of glass fragments. Cheap glass jars often contained air bubbles which broke down when the jar was filled with a hot liquid. A Ministry of Health report stated that "Glass jars were not regarded as objectionable," but Mr. Gill said he was not prepared to endorse that opinion.

Asbestos Producers' Amalgamation

THE amalgamation of two great asbestos companies is announced, namely, Turner and Newall, of Rochdale (whose capital was this year increased to £4,000,000, and Bell's United Asbestos Co., Ltd., whose issued and paid-up capital is £1,002,500. The completed agreement, it is stated, will be ready within a few days. Turner and Newall was converted from a private to a public company in 1925, and now holds all the capital of Turner Bros. Asbestos Co., Ltd., the Washington Chemical Co., Ltd., Newalls' Insulation Co., Ltd., and J. W. Roberts, Ltd. The company also holds all the ordinary shares in Ferodo, Ltd., and an interest in several other important firms. The profits last year were over £440,000, and the distribution on the ordinary shares was 12½ per cent. Bell's United Asbestos Co. holds the entire share capital of Potter's Asbestos Co., Ltd., and of Bell's Poilite and Everite Co., Ltd. It also acquired recently the shares of the British Fibro-Cement Works, Ltd. The net profit last year was £65,434, and the dividend 12½ per cent.

Death of Mr. C. A. Smetham

A Prominent Merseyside Chemist

THE death occurred at Rock Ferry, on Thursday, October 11, of Mr. C. Alfred Smetham, F.I.C., a prominent Merseyside consulting chemist. Born in London in 1856, Mr. Smetham began his chemical work under the late Dr. Augustus Voelcker, with whom he was articled. For some years he conducted experiments on Cheshire cheese-making for the Board of Agriculture, and wrote a number of pamphlets on agricultural activities. He served on the Council of the Chemical Society, was chairman of the North Western Section of the Institute of Chemistry, and was at one time vice-president of the Institute. Consulting chemist to the Royal Lancashire Agricultural Society, and the Cheshire Agricultural Society, he was official agricultural analyst for the county of Westmorland and official analyst of the Liverpool Corn Trade Association. He had practised for many years in Liverpool, and for the past nine years had been in partnership with Mr. R. Dodd.

The Analysis of Cracked Spirits

A MEETING of the Institution of Petroleum Technologists was held in London on Tuesday evening, October 11, when, with Mr. Alfred C. Adams, the president, in the chair, Dr. F. H. Garner read a paper on "The Analysis of Cracked Spirits: The determination of aromatic, olefine, naphthene and paraffin hydrocarbons."

In commencing Dr. Garner pointed out that the importance of cracking to supplement the natural spirit present in crude petroleum was well recognised, and in view of the anti-pinking qualities of these spirits, in some instances cracked spirits were sold at a premium over straight-run spirits. Analysis of such spirits had been a matter of considerable difficulty, because there was no satisfactory method of separating olefines from aromatic hydrocarbons.

In a general description of the method of analysis he stated that olefine and aromatic hydrocarbons were removed simultaneously from the cracked gasoline with the aid of nitric acid, and the aniline point of the remaining spirit was used for the estimation of the percentage of paraffin and naphthene hydrocarbons. The aniline point difference before and after the acid treatment was determined, and also the percentage loss in volume. The iodine number of the original petrol was found.

In order to eliminate as far as possible certain errors in the various measurements, a slightly different method of procedure was adopted with different gasolines, with varying iodine numbers.

After a detailed description of the methods employed, the speaker concluded by pointing out that the method of analysis described was not claimed to be as accurate as could be desired. It was, however, put forward as a rational method of analysis which will give consistent results with an accuracy probably within 1 of the correct figure. This accuracy was sufficient for correlating with engine tests or for estimating the approximate value of a fuel from anti-pinking qualities.

Dr. Duggan's Parting Achievement

BEFORE leaving New York to return permanently to England, Dr. Duggan, who has occupied rooms at the Chemists' Club, New York, for many years, and served as Chairman of the Club, reset the Club's handsome grandfather's clock of which he was one of the donors and which he has regularly wound for many years. He also, before leaving, demonstrated his skill in watch manipulation by an operation described as follows in the Club publication the *Percolator*:—

"One Sunday at the Club; B. C. Hesse came down with his Waterbury watch in a newspaper; something had gone wrong; thought he would take the inside outside; succeeded; of the fragments there were forty baskets; bet Dr. Duggan fifty cents Duggan couldn't put the ex-inside but pro tem outside inside; Duggan took the bet; spent all day on it; won; when he was through he had 3 wheels left over and the watch ran backward but it kept perfect time; Hesse paid."

"Note by Editor: The best recollection in the Club is that only two wheels were left over, but Dr. Duggan says it had to be an odd number to run backward. And he certainly ought to know."

From Week to Week

MR. F. W. IMBERT TERRY has been elected Master of the Distillers Co., Ltd.

MR. W. A. CALDWELL has been appointed by the Secretary of State for the Colonies to be Engineer Chemist in the Federated Malay States.

THE BRITISH Commercial Gas Association will hold its annual meeting and conference at York on Monday, Tuesday and Wednesday next week.

PAN DE AZUCAR NITRATE CO., LTD., announce that the registered office of the company has been removed to Stone House, 128, Bishopsgate, London.

OWING to a re-arrangement on the part of the Post Office, the address of the Lydbrook Chemical Co. has been altered from "Lydbrook, near Ross," to "Lydbrook, Glos."

THE COUNCIL of the Pharmaceutical Society of Ireland have obtained permission to use the Dublin Mansion House for the British Pharmaceutical Conference in June, 1929.

WHILE OILING an overhead crane at the works of Synthetic Ammonia and Nitrates, Ltd., on Sunday, a greaser, Frank McEnery, aged 32, slipped and fell 20 feet to the ground, dying shortly afterwards from a broken skull.

MR. GUY LOCOCK, assistant director of the F.B.I., has been appointed by the Federation to accompany British delegates to the Diplomatic Conference to be held in Paris in November, with the object of arriving at a convention for the limitation of international exhibitions.

IT IS UNDERSTOOD that a company with a capital of £25,000 has been formed in Auckland to develop the mercury ore deposits near Nghwha Springs between Ohaewai and Kaikaha. I.C.I. is strongly interested in the new concern, which is expected to employ between 40 and 50 workpeople.

THE WELL-KNOWN K.E.K. grinding and blending mills are in future to be marketed by the Buffoline Noiseless Gear Co., Ltd., of 27, Lots Road, Chelsea, S.W.10, the company which has always been responsible for the manufacture of these mills and has now, as announced, decided to undertake their marketing also.

PROFESSOR H. L. CALLENDAR will commence the Tyndall lectures at the Royal Institution on October 30, with the first of three lectures on "Co-aggregation *versus* Continuity in the Change of State from Liquid to Vapour." On November 20 Sir William Bragg will deliver the first of four lectures on "Diamonds."

THE FRENCH COMPANY Société Industrielle de Produits Chimiques de Bozel-Maëtra, at a recent general meeting, decided to acquire the companies known as Manufactures Chimiques de Menessis and Corbie (producers of hydrochloric and sulphuric acid) and Compagnie Française du Silicate pour les Routes (producers of sodium silicate).

THE NECESSARY PLANT and machinery for the New G. and S. Processes Syndicate, Ltd., is in course of erection at the Tooley Street premises, and it is anticipated that it will be ready shortly for the production of splinterless glass on a commercial scale for demonstration purposes. A plant for the manufacture of artificial silk has been ordered.

ARTIFICIAL SILK NEWS.—It is announced that the I.G. Farbenindustrie have been granted patents for a new process in the manufacture of artificial silk, which is said to result in the production of artificial silk with three times the resistant qualities of material now in use. A daily output of 2,000 kgs. is expected from a works in association with the Bemberg concern.

THE GRAND COUNCIL of the F.B.I. on Wednesday, October 10, considered the question of rating relief for industry. It was noted with some apprehension the expressions of opposition to the Government's proposals for reforming local government, which are of particular importance to industry, as relief has been stated by the Government to be dependent on the proposed local government reform.

A BELGIAN COMPANY is to be formed, with a capital of 30 million francs, to deal with the roasting of blende and the recovery of by-products, especially sulphuric acid. Among the interests concerned in this new venture are Produits Chimiques de Laeken, Métallurgique de Prayon, Société Anonyme de Rothem, Société Métallurgique de Boom, and Compagnie des Métaux d'Overpelt-Lommel et de Corphalie; to which will probably be added Société des Mines et Fonderies de Zinc et de Plomb de la Nouvelle-Montagne. The new company will have a factory in Willebroek.

MR. C. B. O. CLARK, Master of the Clothworkers' Company, on Thursday, October 11, formally opened the extensions of the Clothworkers' Department of Textile Industries and Colour Chemistry and Dyeing in the University of Leeds. These have been erected at the cost of the Company and equipped in a large measure by gifts from a number of engineers and manufacturers. The company, which has already given about a quarter of a million pounds to the University, has voted a further grant of £3,000 a year for four years, and this endowment has made possible the appointment of two assistants for research, an additional lecturer, and the award of eight research scholarships.

THE I.G. has centralised the sale of its pharmaceutical products at Leverkusen.

LARGE DEPOSITS OF SODA are said to have been discovered in Russia. The amount is estimated at 100 million tons.

DR. C. C. CARPENTER, President of the South Metropolitan Gas Co., Ltd., has been appointed a Justice of the Peace for the County of London.

THE ERECTION of a chemical factory by Messrs. Stafford Allen at Ardleigh Green was banned by the Hornchurch District Council on October 9.

THE LAST BRITISH zinc blende mine, at Threlkeld, Keswick, owned by Marple and Gillott, Ltd., of Sheffield, was closed on Saturday, October 13.

A WARNING REGARDING the storing of calcium carbide was given in Leeds last week, when a number of persons were summoned for keeping greater quantities than 5 lb. without a licence.

MR. L. EVANS, of the laboratory staff, Muspratt works, Widnes, who has recently been married, was on Friday, October 6, presented with a chiming clock on behalf of the office and laboratory staffs.

POTASH BEDS extending along the Pyrenees through the provinces of Catalonia, Aragon and Navarre, and probably Guipuzcoa, are reported to have been discovered in investigations by the directors of the Spanish Geological and Mining Institute.

THE MERCURY CARTEL (Mercurio Europio) will use Lausanne as its sales headquarters. The following mines will dispose of products solely from this quarter: Spanish—Minas de Almaden; Italian, Azienda Erariale di Idria, Monte Amiata, Società Mercurifera Italiana, Stabilimento Minerario del Sile.

THE PRODUCTION of transparent "paper" from viscose is to be carried on at a factory at Bury, Lancashire, as a result of an investigation into the problem by a group of chemists and business men. The enterprise constitutes a monopoly in the industry in this country and the methods of production are highly confidential.

THE TRANSPARENCY TO ULTRA-VIOLET LIGHT of various fabrics has been investigated by the U.S. Bureau of Standards. The results show that the most transparent fabrics are white cotton and viscose (which both consist of almost pure cellulose), cellulose acetate and linen. Natural silk and wool, especially the latter, are less transparent.

MR. W. J. U. WOOLCOCK, Sir Ernest Benn, and Mr. F. W. Goodenough are among the members of an advisory committee appointed by the Board of Education to consider the problem of education for salesmen and to make any recommendations that may appear desirable for the promotion of greater efficiency in the marketing of British goods at home and overseas.

THE NEW LABORATORIES at Sheffield for Safety in Mines Research were opened by Mr. Stanley Baldwin on Thursday, October 11. Mr. Baldwin and his party were met at the entrance to the laboratory by the Lord Mayor of Sheffield, Professor R. V. Wheeler, Sir Henry Hadow, vice chancellor of the University, Lord Chelmsford, Sir Edward Troup and Professor Stevenson.

SENSIBLE HEAT DISTILLATION (the "L. and N." process) announces that its French operating company is in course of formation in Paris. The French directorate will consist of General Georges Patart (technical director) Monsieur Maurice Ganne, and Monsieur Hypolite Bouchayer. The name and address of the company will be "L. and N." France, 12, Rue du Faubourg St. Honore, Paris.

UNIVERSITY NEWS.—*Birmingham*:—The Council of the University has made the following appointments:—Mr. Stanley Peat, B.Sc., Ph.D., Assistant Lecturer in Department of Biochemistry; Mr. Norman Allen, M.Met., Assistant Lecturer in Department of Metallurgy; Mr. L. H. Needham, M.Sc., Assistant Lecturer in Coal Treatment, Department of Mining; Mr. I. A. Preece, M.Sc., Assistant Lecturer in Department of Brewing.—*London*:—Dr. S. J. Gregg has been appointed assistant lecturer in chemistry at King's College.—*Aberdeen*:—Professor J. J. R. MacLeod, co-discoverer with Dr. Banting of insulin, has been installed to the Chair of Physiology.

THE ANGLO-FRENCH PULP CO., LTD., which made an issue of shares this week, will work the Rinman process of manufacturing wood pulp for paper by which it is claimed the cost of manufacture is reduced considerably by the recovery of valuable chemical by-products. The patents covering the process are owned by the Cellulosa Co. of Stockholm, and the Anglo-Foreign Pulp Co. is entitled to work the process, royalty free, at a mill in Regensburg, Bavaria. The directors include Mr. A. Colegate, formerly a director of Brunner, Mond and Co., Sir J. M. Paton, chairman of the Nuera Art Silk Co., and Mr. Percy Boyden, director of the Aktiebolaget Cellulosa of Stockholm. Messrs. Cross and Bevan, in a report on the company's process, state they have examined samples of methyl alcohol, acetone, methyl ethyl ketone, turpentine and oils produced at Regensburg, and find them of high grade quality.

Obituary

MR. H. LEATON EDWARDS, F.I.C., manager of the Raw Materials Laboratory, Lever Brothers, Ltd., at Birkenhead, on Friday, October 12, aged 71. He was with the firm for more than 40 years.

Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

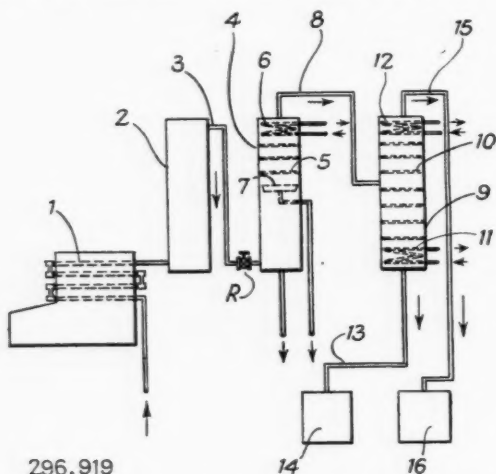
Abstracts of Complete Specifications

- 296,847. PARA-FORMALDEHYDE, MANUFACTURE OF. J. Y. Johnson, London. From I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, July 1, 1927.

Specification No. 267,768 (see THE CHEMICAL AGE, Vol. XVI, p. 401) describes the process for obtaining a good yield of a readily soluble paraformaldehyde by preparing formaldehyde by the catalytic oxidation of anhydrous methanol, and condensing the reaction mixture by cooling it to 30° C. In the present process the reaction gases containing formaldehyde and water vapour are cooled and then washed with a warm strong solution of formaldehyde, *e.g.*, 60 per cent. strength. The washing liquid is preferably maintained at a temperature sufficiently high to prevent the deposition of paraformaldehyde during the washing. Inert gases such as nitrogen may act as cooling agent, and may be added to the reaction gases before or during washing. The gas carries away water vapour from the mixture of washing liquid and condensate, so that the solution deposits paraformaldehyde after standing. An example is given.

- 296,919. CRACKING AND FRACTIONATION OF HYDROCARBON MIXTURES, PROCESS AND APPARATUS FOR. C. Arnold, London. From Standard Development Co., 26, Broadway, New York. Application date, October 22, 1927.

Hydrocarbons are cracked in a tubular apparatus 1 and drum 2, and the products passed through pipe 3 to a vapour



separator and fractionating tower 4 having rectifying plates 5, cooling coil 6, and a condensate collector 7 for a heavy condensate corresponding to gas oil. Vapour passes through pipe 8 to the middle of a fractionating tower 9 having rectifying plates 10, a heating coil 11, at the bottom, and a cooling coil 12 at the top. A kerosene condensate is drawn off by a pipe 13, while gasoline vapour is drawn off through pipe 15 to a condenser 16.

- 296,925. PURIFYING GASES AND GASEOUS MIXTURES. J. H. Brégeat, 24, Rue de la Fidélité, Paris. Application date, November 24, 1927.

The object is to remove from gases impurities such as tarry products, naphthalene, paraffin, etc. which cause obstruction in pipes. In this process the gas is treated with hydrogenated derivatives of naphthalene, *e.g.*, the tetra and deca-hydrides known as "tetralin" and "dekalin" or with hydrogenated cresol, hydrogenated terpenes, or other hydrogenated products of hydro-aromatic or alicyclic compounds. The presence of these substances in the gases removes naphthalene already deposited in the pipes. The tetralin containing naphthalene may be reduced in temperature to crystallise the naphthalene.

- 296,935. HIGHLY SULPHONATED OILS, FATS, FATTY ACIDS, AND WAXES, MANUFACTURE OF. Erba Akt.-Ges., 46, Breitensteinstrasse, Zurich, Switzerland. International Convention date, November 22, 1927. Addition to 294,621.

Specification No. 294,621 describes a process for preparing colourless highly sulphonated turkey red oils by sulphonating castor oil in the presence of bleaching agents. It is now found that this process is applicable to all animal or vegetable oils, fats, fatty acids, and waxes which are capable of sulphonation. The sulphonation may be effected with organic sulphonic acids or by sulphurous acid, and the sulphonated oil may be again bleached after this operation.

- 297,009. AMMONIUM PHOSPHATE, PRODUCTION OF. S. G. S. Dicker, London. From Chemical Products Co., Alabama Power Building, Corner of 6th Avenue and 18th Street, Birmingham, Jefferson Co., Ala., U.S.A. Application date, June 10, 1927.

In the production of ammonium phosphate from natural phosphates the material has been mixed with ammonium sulphate solution containing sulphuric acid, yielding a precipitate of calcium sulphate and a solution containing ammonium sulphate, ammonium phosphate, phosphoric acid, sulphuric acid, and acid sulphate and phosphate of ammonia. The calcium phosphate precipitate was mixed with ammonium carbonate solution to produce calcium carbonate and ammonium sulphate, the latter being used again. In this invention, the separation of the solution obtained by treating natural phosphates with ammonium bisulphate is effected by treating with ammonia gas to produce triammonium phosphate, which is relatively insoluble, and ammonium sulphate. These two substances are separated by crystallisation. The unstable tri-ammonium phosphate is heated in an evaporating pan to obtain mono- and di-ammonium phosphates and expel ammonia which is used again in the process. The ammonium sulphate is also converted into ammonium bisulphate and ammonia. The calcium sulphate precipitate is mixed with ammonium carbonate solution, or with ammonia and carbon dioxide to obtain calcium carbonate and ammonium sulphate. The latter is filtered off, evaporated to dryness and heated to 300° C. to convert it into ammonium bisulphate and ammonia, which are used again. It is found that 80-95 per cent. of the phosphate content of phosphate rock can be obtained as ammonium phosphate.

- 297,042. ANTHRAHYDROQUINONE DERIVATIVES, MANUFACTURE OF. O. Y. Imray, London. From I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, April 13, 1927.

It is found that when β -acylamino-9:10-anthraquinones in which the acyl group is the residue of a carboxylic acid of the aliphatic series are reduced at low temperature by hydrogen under pressure in the presence of metal catalysts, the corresponding hydroquinones are obtained. The corresponding 9:10-diethers or 9:10-diesters are obtained by reaction with etherifying or esterifying agents. Examples are given of the treatment of β -acetamino-anthraquinone with hydrogen at 20 atmospheres pressure in the presence of a nickel catalyst to obtain a suspension of β -acetamino-9:10-anthrahydroquinone. The latter is treated with dimethyl sulphate to obtain β -acetamino-9:10-anthrahydroquinone-dimethyl-ether. Other similar examples are also given.

- 297,075. COMPOUNDS FROM INDENE AND PHENOLS, PROCESS FOR THE MANUFACTURE OF. A. Carpmal, London. From I.G. Farbenindustrie Akt.-Ges., Frankfurt-on-Main, Germany. Application date, June 14, 1927.

These products are obtained by the action of halogen acids on indene or substances containing indene or indene derivatives and mono or poly-valent phenols or their substitution products. Substances containing indene which may be used include the crude solvent naphtha fraction boiling between 160° and 190° C., or α -substituted indene derivatives, and all types of phenols or their substitution products such as cresol, amino-, nitro-,

and chloro-phenols, thymols, polyvalent phenols, such as pyrocatechin, resorcin, naphthols, etc. An example is given of the treatment of a mixture of phenol and indene with hydrochloric acid to obtain a light coloured oil boiling above 180° C. at 9 mm. pressure. The oil is soluble in cyclo-hexane, hexahydro-toluene or other hydro aromatic hydrocarbon. A substance can be crystallised from the solution which is probably hydrindyl phenol. Other examples are given of the treatment of crude solvent naphtha and other indene-containing substances with cresol and other phenols. The products are employed for therapeutic purposes, and as disinfectants, bases for the manufacture of lacquers, and intermediates for the manufacture of dyestuffs.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention:—267,535 (I.G. Farbenindustrie Akt.-Ges.), relating to manufacture of hydrogen, see Vol. XVI, p. 468; 272,908 (I.G. Farbenindustrie Akt.-Ges.), relating to metallic compounds of azo dyestuffs, see Vol. XVII, p. 200; 275,943 (I.G. Farbenindustrie Akt.-Ges.), relating to valuable coloured compounds, see Vol. XVII, p. 352; 272,919 (H. T. Bohme and H. Bertsch), relating to rendering higher alcohols soluble in aqueous media, see Vol. XVII, p. 200.

International Specifications not yet Accepted

295,276. ORGANIC NITROGEN COMPOUNDS. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, August 8, 1927.

A mixture of acetylene and ammonia is passed at 350° C. through a tube containing a catalyst consisting of mixed thorium and zirconium oxides. The product contains acetonitrile and pyridine bases. The catalyst is preferably in porous form or on a carrier. Other suitable catalysts consist of alumina gel and silica gel, or zinc oxide and irreducible oxides of the third or fourth groups.

295,289. DYES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, August 8, 1927.

Diazotised 1-amino-3:4-dimethyl-6-halogenbenzenes are coupled with arylides of 2:3-oxynaphthoic acid in substance or on the fibre to obtain monoazo dyes fast to kier boiling and light; 1-amino-3:4-dimethyl-6-chlorobenzene is obtained by chlorinating the acetyl compound or the salts of 1-amino-3:4-dimethylbenzene, or by substituting chlorine for the amino group of 1-amino-3:4-dimethyl-6-nitrobenzene and reducing. Several examples are given of the production of the dyestuffs on the fibre.

295,356. ALDEHYDES, ALCOHOLS, AND FUEL GAS. Empire Gas and Fuel Co., Dover, Del., U.S.A. (Assignees of J. C. Walker, Eldorado, Kans., U.S.A.) International Convention date, August 10, 1927.

Natural gas or gases from the distillation of coal, petroleum, and shale, are mixed with air, oxygen, or carbon oxides and

taining the catalyst 70 on a grate 72. The gas is supplied by a pipe 32, 68 above the catalyst, air is supplied by pipe 34, and the reaction products leave by pipe 44. The arrangement of plant is also shown. Gas passes through a dust separator 12, meter 14, compressor 16, and pipe 28 to a heating coil 31 and reaction chamber 42. The products pass through heat exchanger 30, condensing and absorbing apparatus 48, 50, from which the gas may be returned to pipe 28 or may pass through pipe 60 to a second similar set of apparatus with an addition of oxygen. The temperature in the chamber 42 is 800-900° F., and is controlled by an adjustable by-pass 62 around the heating coil. The pressure may be 100-300 lb. Different catalysts and conditions may be employed in the different stages, and methanol may be produced in one stage and formaldehyde in another. Ethane may be oxidised in one stage and methane in another.

295,322. ARTIFICIAL RESINOUS MATERIALS. Canadian Electro Products Co., Ltd., 83, Craig Street West, Montreal, Canada. (Assignees of H. W. Matheson, Montreal, and F. W. Skirrow, Shawinigan, Quebec, Canada.) International Convention date, August 9, 1927.

Vinyl esters or halides are treated with saturated aliphatic aldehydes or materials which produce such aldehydes such as paraldehyde or bodies of the acetal type, at temperatures up to 100° C. and ordinary or increased pressures. The products are gummy or resinous materials.

295,587. HYDROCARBONS. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, August 9, 1926.

Coal, tar, or their products are destructively hydrogenated at a pressure of 20-50 atmospheres in the presence of a catalyst of lead or tin or their compounds. Hydrogen-containing gases may be used, provided that the apparatus is such that formation of methane and separation of carbon do not occur.

295,593. DYES AND INTERMEDIATES. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, August 11, 1927.

2-cyano-3-methyl-5-halogen-1-thioglycolic acid is prepared from 1-methyl-2-amino-3-nitro-5-halogenbenzene by way of the corresponding 2-cyano-3-nitro, 2-cyano-3-amino, and 2-cyano-3-diazonium compounds. The diazonium compound is converted into the thioglycolic acid by forming the xanthic ester and treating with chloroacetic acid after saponifying. An example is given.

295,594. DYES. Soc. of Chemical Industry in Basle, Switzerland. International Convention date, August 13, 1927.

Azo dyestuffs are treated in the presence of alkali sulphides, ammonium sulphide, alkali in combination with glucose, sugar, etc., and with hydrated chromium oxide, with or without pressure, and in some cases in the presence of a protective colloid, or an organic or inorganic salt. Examples are given.

295,600. DYES. L. Casella and Co., Ges., Frankfort-on-Main, Germany. International Convention date, August 11, 1927. Addition to 260,998. (See THE CHEMICAL AGE, Vol. XVI, p. 69.)

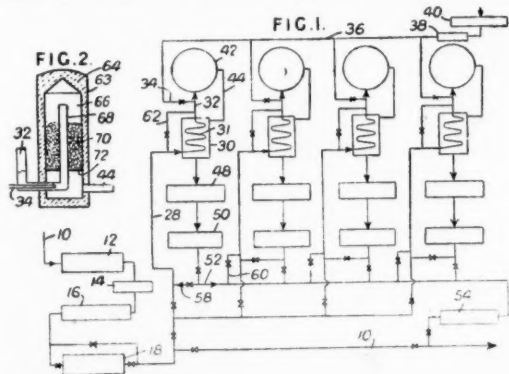
Anthranthone is chlorinated in sulphuric acid of 85-95 per cent. strength, with or without a chlorine carrier, at 45-50° C.

295,641. ACETIC ACID. H. Suida, 33, Jubiläumsstrasse, Mödling, Austria. International Convention date, August 15, 1927.

A solution of acetic acid is treated with esters of monovalent or polyvalent alcohols with monobasic or polybasic cyclic acids, having boiling points above 150° C., and the solution is then distilled to obtain the acetic acid. Thus, in examples, a 12 per cent. acetic acid solution is treated with dibutyl-phthalate, and a 25 per cent. acetic acid solution is treated with diethyl phthalate while heating to partly vaporise the acetic acid. Dimethyl and dihexyl phthalates, esters of the naphthalene acids, and high-boiling esters of benzoic acid may also be used.

295,656. SYNTHETIC DRUGS. I.G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, August 16, 1927.

Organic bases, including alkaloids, are combined with a methylene compound of an aromatic carboxylic or sulphonic acid or a derivative, or a salt of the base is treated with a salt of the acid. A neutral or acid salt is obtained. Examples include salts formed from 1-(N-methyl-diethylaminoethyl)-



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treated catalytically. Aldehydes and alcohols are obtained, and also a gas of uniform calorific power. The catalyst may be that employed for dehydration, dehydrogenation, and oxidation reactions, platinum, palladium, gold, silver, copper, chromium, manganese, iron, nickel, or oxides of these. The catalytic chamber consists of a heat-insulated casing 66 con-

amino-4-aminobenzene and methylene disalicylic acid; methylene di- β -hydroxynaphthoic acid and N-ethyl-diethyl-amino-ethylaniline and other similar compounds.

LATEST NOTIFICATIONS.

- 298,152. Method for the production of styrol from chlor ethyl benzol. Naugatuck Chemical Co. October 4, 1927.
 298,234. Process for the manufacture of derivatives of aminoaryl antimony compounds. I.G. Farbenindustrie Akt.-Ges. October 6, 1927.
 298,137. Process for concentrating acetic acid. Wacker Ges. für Elektrochemische Industrie Ges., Dr. A. October 3, 1927.
 298,138. Process of precipitating viscose solutions. I.G. Farbenindustrie Akt.-Ges. October 3, 1927.
 298,240. Process for the manufacture of pharmaceutical products. I.G. Farbenindustrie Akt.-Ges. October 6, 1927.
 298,484. Process for refining the products of distillation of carbonaceous materials. Hofmann, Dr. F., and Wulff, Dr. O. October 6, 1927.
 298,491. Process for improving the dyeing capacity of hydrated cellulose. I.G. Farbenindustrie Akt.-Ges. October 6, 1927.
 298,492. Manufacture of cut fibres, particularly staple fibre. I.G. Farbenindustrie Akt.-Ges. October 7, 1927.
 298,493. Manufacture of alkoxy-3-oxythio-naphthenes. I.G. Farbenindustrie Akt.-Ges. October 8, 1927.
 298,494. Manufacture and application of dyestuffs containing metal. Soc. of Chemical Industry in Basle. October 8, 1927.

Specifications Accepted with Date of Application

- 270,313. Conversion of hydrocarbons of high boiling point into compounds of lower boiling point. I.G. Farbenindustrie Akt.-Ges. May 1, 1926. Addition to 268,796.
 271,840 and 279,378. Catalysts for synthetic methanol production. Commercial Solvents Corporation. May 26, 1926, and October 25, 1926. 279,378 addition to 271,840.
 271,873. Methods of obtaining zirconium compounds. Titanium Alloy Manufacturing Co. May 27, 1926.
 273,321. Cyclic ketones, Manufacture of. I.G. Farbenindustrie Akt.-Ges. June 24, 1926.
 273,342. Alkyl-ethers of 3'-nitro-4'-hydroxy-ortho-benzoyl-benzoic acid, Process of preparing. Newport Co. June 28, 1926.
 276,668. Purifying hydrogen or gases containing hydrogen. Gewerkschaft der Steinkohlenzeche Mont-Cenis. August 26, 1926.
 277,953. Solid alcoholic solution of free iodine, Process for the manufacture of. K. J. Jungmann and O. Kolbert. September 21, 1926.
 277,946. Refining or fractionating of mineral oils and mineral oil products. Akt.-Ges. für Kohlensäure-industrie and E. B. Auerbach. September 25, 1926.
 280,939. Catalytic gels, Manufacture of. Silica Gel Corporation. November 19, 1926.
 284,206. Sulphonated oils and fats with a high content of organically combined sulphuric acid. H. Flesch. January 24, 1927. Addition to 282,626.
 297,692. N-dihydro-1: 2: 2: 1'-anthraquinone azine, Process of making. F. B. Dehn. (Newport Co.) April 25, 1927.
 297,722. Dyestuffs containing chromium, Manufacture of. J. Y. Johnson. (I.G. Farbenindustrie Akt.-Ges.) June 25, 1927.
 297,756. Monoxy-phenyl-alkyl-ketone derivatives, Manufacture of. H. Legerlotz. April 22, 1927.
 297,759. Refining or purifying metals and alloys, Processes and apparatus for. F. W. Corsalli. June 23, 1927.
 297,784. Tin from cassiterite, Recovery of. E. A. Ashcroft. June 24, 1927.
 297,855. Intermediate compounds and azo dyes therefrom, Manufacture of. British Dyestuffs Corporation, Ltd., and M. Mendoza. May 27, 1927.
 297,880. Hydrogen peroxide, Manufacture of—by cathodic reduction of oxygen. A. Carpmal. (I.G. Farbenindustrie Akt.-Ges.) June 30, 1927.
 297,884. Azo dyestuffs, Process for the manufacture of. A. Carpmal. (I.G. Farbenindustrie Akt.-Ges.) July 1, 1927.
 297,897. Dyeing cellulose esters and ethers. British Dyestuffs Corporation, Ltd., L. G. Lawrie, F. W. Linch and E. H. Rodd. July 5, 1927.
 297,938. Magnetic alloys. W. E. Beatty. (Bell Telephone Laboratories, Inc.) August 29, 1927.
 297,949. Cracking hydrocarbon oils, Processes for. H. A. Gill. (Gasoline Products Co., Inc.) September 5, 1927.
 297,960. Mixed fertilisers. J. Y. Johnson. (I.G. Farbenindustrie Akt.-Ges.) September 15, 1927.
 297,980. Compounds of arylene-diamines. Imperial Chemical Industries, Ltd., and A. Riley. October 17, 1927.
 297,999. Thiourea, Production of. J. Y. Johnson. (I.G. Farbenindustrie Akt.-Ges.) November 9, 1927.

Applications for Patents

- Barber, T. W. Mixing gases and liquids. 28,861. October 8.
 Barber, T. W. Separation and emulsification of tars. 28,862. October 8.

- Bataafsche Petroleum Maatschappij. Manufacture of emulsifying, etc., agents. 29,352. October 11. (Holland, November 15, 1927.)
 Bataafsche Petroleum Maatschappij. Purification of sulphonie acids, etc. 29,366. October 11. (Holland, November 11, 1927.)
 Boot's Pure Drug Co., Ltd., and Marshall, J. Production of monohydric phenols. 29,377. October 11.
 Carpmal, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of stable highly-chlorinated train oils. 29,186. October 10.
 Carpmal, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of acid dyestuffs. 29,187. October 10.
 Carpmal, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of cupric cyanic, etc., compounds. 29,188. October 10.
 Carpmal, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of solution of 2: 3-hydroxynaphthoic acid arylides. 29,342. October 11.
 Carpmal, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of derivatives of dinaphthalene dioxide. 29,343. October 11.
 Carpmal, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of boron trifluoride. 29,502. October 12.
 Carpmal, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of dyestuffs, etc. 29,503. October 12.
 Carpmal, A., and I.G. Farbenindustrie Akt.-Ges. Immunising seed grain. 29,575. October 13.
 Carpmal, A., and I.G. Farbenindustrie Akt.-Ges. Manufacture of sulphonated isatoic acid anhydrides. 29,576. October 13.
 Coles, S. O. Cowper. Electrodeposition of metals. 28,809, 28,864. October 8.
 Coley, H. E. Manufacture of zinc. 29,493. October 12.
 Gerber, W. Devices for heating dye liquids, etc. 29,134. October 10.
 I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of mixed fertiliser. 28,880. October 8.
 I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of wetting, etc., agents. 28,881. October 8.
 I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of substitution products of dibenzopyrenequinones. 28,882. October 8.
 I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Treatment of raw silk, etc. 28,883. October 8.
 I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of anthanthrone derivatives. 29,008. October 9.
 I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of derivatives of pyranthrone. 29,009. October 9.
 I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of hydrocarbons. 29,010. October 9.
 I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of carbon black. 29,139. October 10. (August 3.)
 I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of catalysts. 29,140. October 10.
 I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of dyestuffs. 29,141. October 10.
 I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Purification of hydrocarbons. 29,286, 29,287. October 11.
 I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Manufacture of anthraquinone, etc. 29,288. October 11.
 I.G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of metallic deposits from metal carbonyls. 29,444. October 12.
 I.G. Farbenindustrie Akt.-Ges. Process for improving dyeing capacity of hydrated cellulose. 28,929. October 8. (Germany, October 6, 1927.)
 I.G. Farbenindustrie Akt.-Ges. Manufacture of cut fibres. 28,930. October 8. (Germany, October 7, 1927.)
 I.G. Farbenindustrie Akt.-Ges. Manufacture of alkoxy-3-oxythio-naphthenes. 28,931. October 8. (Germany, October 8, 1927.)
 I.G. Farbenindustrie Akt.-Ges. Manufacture of dinaphthalene dioxide quinone. 29,184. October 10. (Germany, October 13, 1927.)
 I.G. Farbenindustrie Akt.-Ges. Manufacture of water soluble products from lignite, etc. 29,185. October 10.
 I.G. Farbenindustrie Akt.-Ges. Denaturing agents for alcohol. 29,293. October 11. (Germany, October 12, 1927.)
 I.G. Farbenindustrie Akt.-Ges. Denaturing agents for alcohol. 29,450. October 12. (Germany, October 12, 1927.)
 I.G. Farbenindustrie Akt.-Ges. Hydrocarbons. 29,609. October 13.
 Imperial Chemical Industries, Ltd. Manufacture of esters. 29,489. October 12.
 Imperial Chemical Industries, Ltd. Removal of ammonia from coal distillation gases. 29,545. October 13.
 Osterstrom, R. C. Method of purifying hydrocarbon distillates. 29,047. October 9.
 Paterson, W. Purification of water. 29,478. October 12.
 Payman, J. B. Manufacture of esters. 29,489. October 12.
 Soc. of Chemical Industry in Basle. Manufacture of dyestuffs containing metal. 28,932. October 8. (Switzerland, October 8, 1927.)
 Vereinigte Glanzstoff-Fabriken Akt.-Ges. Separation of sodium sulphate from sulphuric acid. 29,123. October 10. (Germany, October 13, 1927.)

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.
 ACID BORIC, COMMERCIAL.—Crystal, £30 per ton; powder, £32 per ton; extra fine powder, £34 per ton.
 ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.
 ACID NITRIC, 80° Tw.—£21 10s. to £27 per ton, makers' works, according to district and quality.
 ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations; 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.
 AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.
 BISULPHITE OF LIME.—£7 10s. per ton, f.o.r. London, packages free.
 BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.
 BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags carriage paid any station in Great Britain.)
 CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.
 COPPER SULPHATE.—£25 to £25 10s. per ton.
 METHYLATED SPIRIT 61 O.P.—Industrial, 1s. 3d. to 1s. 8d. per gall., pyridinised industrial, 1s. 5d. to 1s. 10d. per gall.; mineralised, 2s. 4d. to 2s. 8d. per gall.; 64 O.P., 1d. extra in all cases.
 NICKEL SULPHATE.—£38 per ton d/d.
 NICKEL AMMONIA SULPHATE.—£38 per ton d/d.
 POTASH CAUSTIC.—£30 to £33 per ton.
 POTASSIUM BICHROMATE.—4½d. per lb.
 POTASSIUM CHLORATE.—3½d. per lb., ex wharf, London, in cwt. kegs, SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.
 SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.
 SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.
 SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.
 SODIUM ACETATE 97/98%.—£21 per ton.
 SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.
 SODIUM BICHROMATE.—3½d. per lb.
 SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton delivered for home market, 1-cwt. drums included; £15 10s. f.o.r. London.
 SODIUM CHLORATE.—2½d. per lb.
 SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.
 SODIUM PHOSPHATE.—£14 per ton, f.o.b. London, casks free.
 SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.
 SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.
 SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.
 SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.b. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—6½d. to 6¾d. per lb. Crude 60's, 2s. per gall. 1029—1s. 11d. per gall.
 ACID CRESYLIC 99/100.—2s. 5d. to 3s. per gall. 97/99.—2s. 4d. to 2s. 5d. per gall. Pale, 95%, 2s. 2d. to 2s. 3d. per gall. Dark, 1s. 9d. to 1s. 11d.
 ANTHRACENE.—A quality, 2d. to 2½d. per unit. 40%, £5 per ton.
 ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.
 BENZOLE.—Prices at works: Crude, 10½d. to 11d. per gall.; Standard Motor, 1s. 4½d. to 1s. 5d. per gall.; 90%, 1s. 7d. to 1s. 8d. per gall.; Pure, 1s. 10d. to 1s. 11d. per gall.
 TOLUOLE.—90%, 1s. 5d. to 1s. 11d. per gall. Firm. Pure, 1s. 10d. to 2s. per gall.
 XYLOL.—1s. 3d. to 1s. 11d. per gall. Pure, 1s. 6d. to 1s. 7d. per gall.
 CREOSOTE.—Cresylic, 20/24%, 9d. per gall.; Heavy, 7d. to 8d. per gall. Standard specification, middle oil, 6½d. to 6¾d. per gall. 5½d. to 6d. per gall. ex works. Salty, 7½d. per gall.
 NAPHTHA.—Crude, 8½d. to 9d. per gall. Solvent 90/160, 1s. 1½d. to 1s. 2½d. per gall. Solvent 95/160, 1s. 2d. to 1s. 7d. per gall. Solvent 90/190, 11d. to 1s. 4d. per gall.
 NAPHTHALENE CRUDE.—Drained Creosote Salts, £5 per ton. Whizzed, £8 per ton. Hot pressed, £8 10s. per ton.
 NAPHTHALENE.—Crystals, £12 5s. to £14 10s. per ton. Quiet. Flaked, £14 to £15 per ton, according to districts.
 PITCH.—Medium soft, 42s. 6d. to 45s. per ton, f.o.b., according to district. Nominal.
 PYRIDINE.—90/140, 5s. to 5s. 6d. per gall. 90/180, 2s. 3d. to 4s. per gall. Heavy, 1s. 9d. to 2s. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:
 ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.
 ACID ANTHRANILIC.—6s. per lb. 100%.
 ACID BENZOIC.—1s. 8½d. per lb.
 ACID GAMMA.—4s. 6d. per lb.
 ACID H.—3s. per lb.
 ACID NAPHTHIONIC.—1s. 6d. per lb.
 ACID NEVILLE AND WINTHER.—4s. 9d. per lb.
 ACID SULPHANILIC.—8½d. per lb.
 ANILINE OIL.—8d. per lb. naked at works.
 ANILINE SALTS.—8d. per lb. naked at works.
 BENZALDEHYDE.—2s. 3d. per lb.
 BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.
 BENZOIC ACID.—1s. 8½d. per lb.
 o-CRESOL 29/31° C.—5½d. per lb.
 m-CRESOL 98/100%.—2s. 3d. to 2s. 6d. per lb.
 p-CRESOL 32/34° C.—2s. 3d. to 2s. 6d. per lb.
 DICHLORANILINE.—2s. per lb.
 DIMETHYLANILINE.—1s. 11d. per lb.
 DINITROBENZENE.—8½d. per lb. naked at works. £75 per ton.
 DINITROCHLOROBENZENE.—£84 per ton d/d.
 DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.
 DIPHENYLAMINE.—2s. 10d. per lb. d/d.
 a-NAPHTHOL.—2s. per lb. d/d.
 B-NAPHTHOL.—10d. per lb. d/d.
 a-NAPHTHYLAMINE.—1s. 3d. per lb.
 B-NAPHTHYLAMINE.—3s. per lb.
 o-NITRANILINE.—5s. 9d. per lb.
 m-NITRANILINE.—3s. per lb. d/d.
 p-NITRANILINE.—1s. 8d. per lb.
 NITROBENZENE.—6d. per lb. naked at works.
 NITRONAPHTHALENE.—1s. 3d. per lb.
 R. SALT.—2s. 2d. per lb.
 SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.
 o-TOLUIDINE.—8d. per lb.
 p-TOLUIDINE.—1s. 10d. per lb. naked at works.
 m-XYLIDINE ACETATE.—2s. 6d. per lb. 100%.
 N. W. ACID.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £10 5s. per ton. Good demand. Grey, £14 10s. to £15 per ton. Liquor, 9d. per gall.
 CHARCOAL.—£6 to £9 per ton, according to grade and locality. Foreign competition severe.
 IRON LIQUOR.—1s. 3d. per gall, 32° Tw. 1s. per gall. 24° Tw.
 RED LIQUOR.—9d. to 10d. per gall.
 WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.
 WOOD NAPHTHA, MISCIBLE.—3s. 11d. to 4s. 3d. per gall. Solvent, 4s. 3d. per gall.
 WOOD TAR.—£4 to £5 per ton.
 BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.
 ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.
 BARYTES.—£2 16s. 10d. to £3 10s. per ton, according to quality.
 CADMIUM SULPHIDE.—3s. 9d. to 4s. 6d. per lb.
 CARBON BISULPHIDE.—£25 to £27 10s. per ton, according to quantity.
 CARBON BLACK.—5½d. per lb., ex wharf.
 CARBON TETRACHLORIDE.—£45 to £54 per ton, according to quantity. drums extra.
 CHROMIUM OXIDE, GREEN.—1s. 2d. per lb.
 DIPHENYLGUANIDINE.—3s. 9d. per lb.
 INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5d. to 6½d. per lb.
 LAMP BLACK.—£35 per ton, barrels free.
 LEAD HYPOSULPHITE.—9d. per lb.
 LITHOPHON, 30%.—£22 10s. per ton.
 MINERAL RUBBER "RUBFRON".—£13 12s. 6d. per ton, f.o.r. London.
 SULPHUR.—£9 to £11 per ton, according to quality.
 SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.
 SULPHUR PRECIP. B.P.—£55 to £60 per ton.
 THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb., carriage paid.
 THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.
 VERMILION, PALE OR DEEP.—7s. to 7s. 2d. per lb.
 ZINC SULPHUR.—11d. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.
 ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 5d. per lb.
 ACID, BENZOIC, B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. 3d. to 1s. 6d. per oz., according to quantity.

ACID, BORIC B.P.—Crystal, 36s. to 39s. per cwt.; powder, 40s. to 43s. per cwt.; extra fine powder, 42s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

ACID, CAMPHORIC.—19s. to 21s. per lb.

ACID, CITRIC.—2s. 9d. to 3s. per lb.

ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.

ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. 10½d. per lb.

ACID, SALICYLIC, B.P. PULV.—1s. 4½d. to 1s. 6d. per lb. Technical.—10½d. to 11½d. per lb.

ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.

ACID, TARTARIC.—1s. 4½d. per lb., less 5%.

ACETANILIDE.—1s. 5d. to 1s. 8d. per lb. for quantities.

AMIDOL.—7s. 6d. to 9s. per lb., d/d.

AMIDOPYRIN.—7s. 9d. to 8s. per lb.

AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity. 18s. per lb. ex Gum.

AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimed, 1s. per lb.

ATROPINE SULPHATE.—9s. per oz.

BARBITONE.—5s. 9d. to 6s. per lb.

BENZONAPHTHOL.—3s. to 3s. 3d. per lb. spot.

BISMUTH CARBONATE.—9s. 9d. per lb.

BISMUTH CITRATE.—9s. 3d. per lb.

BISMUTH SALICYLATE.—8s. 9d. per lb.

BISMUTH SUBNITRATE.—8s. 3d. per lb.

BISMUTH NITRATE.—Cryst. 5s. 9d. per lb.

BISMUTH OXIDE.—12s. 3d. per lb.

BISMUTH SUBCHLORIDE.—10s. 9d. per lb.

BISMUTH SUBGALLATE.—7s. 9d. per lb. Extra and reduced prices for smaller and larger quantities of all bismuth salts respectively.

BISMUTH ET AMMON LIQUOR.—Cit. B.P. in W. Qts. 1s. 0½d. per lb.; 12 W. Qts. 11½d. per lb.; 36 W. Qts. 11d. per lb.

BORAX B.P.—Crystal, 24s. to 27s. per cwt.; powder, 25s. to 28s. per cwt., according to quantity. Carriage paid any station in Great Britain, in ton lots.

BROMIDES.—Ammonium, 2s. to 2s. 3d. per lb.; potassium, 1s. 8½d. to 1s. 11½d. per lb.; sodium, 1s. 11d. to 2s. 2d. per lb.; granulated, ½d. per lb. less; all spot. Large quantities at lower rates.

CALCIUM LACTATE.—B.P., 1s. 2½d. to 1s. 3d. per lb.

CAMPHOR.—Refined flowers, 2s. 11d. to 3s. per lb., according to quantity; also special contract prices.

CHLORAL HYDRATE.—3s. 2d. to 3s. 4d. per lb.

CHLOROFORM.—2s. 5½d. to 2s. 7½d. per lb., according to quantity.

CREOSOTE CARBONATE.—6s. per lb.

ETHERS.—S.G. 730—11d. to 1s. 0d. per lb., according to quantity; other gravities at proportionate prices.

FORMALDEHYDE, 40%.—37s. per cwt., in barrels ex wharf.

GUAIACOL CARBONATE.—4s. 6d. to 4s. 9d. per lb.

HEXAMINE.—1s. 11d. to 2s. 2d. per lb.

HOMATROPINE HYDROBROMIDE.—30s. per oz.

HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.

HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. Winchester, 2s. 11d. per gall. B.P., 10 vols., 2s. to 2s. 3d. per gall.; 20 vols., 4s. per gall.

HYDROQUINONE.—3s. 9d. to 4s. per lb., in cwt. lots.

HYPOPHOSPHITES.—Calcium, 3s. 3d. per lb., for 28 lb. lots; potassium, 3s. 7d. per lb.; sodium, 3s. 6d. per lb.

IRON AMMONIUM CITRATE.—B.P., 2s. 11d. to 3s. 2d. per lb. Green, 3s. 4d. to 3s. 7d. per lb.; U.S.P., 3s. to 3s. 3d. per lb.

IRON PERCHLORIDE.—18s. to 20s. per cwt., according to quantity.

IRON QUININE CITRATE.—B.P., 8½d. to 9½d. per oz.

MAGNESIUM CARBONATE.—Light commercial, £62 10s. per ton, less 2½%; Heavy commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb.

MENTHOL.—A.B.R. recrystallised B.P., 24s. 6d. per lb. net; Synthetic, 10s. 6d. to 11s. 6d. per lb.; Synthetic detached crystals, 10s. 6d. to 12s. 6d. per lb., according to quantity; Liquid (95%), 9s. 6d. per lb.

MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, crystals, 8s. 4d. to 8s. 5d. per lb., levig., 7s. 10d. to 7s. 11d. per lb.; Corrosive Sublimate, Lump, 6s. 7d. to 6s. 8d. per lb., Powder, 6s. to 6s. 1d. per lb.; White Precipitate, Lump, 6s. 9d. to 6s. 10d. per lb., Powder, 6s. 10d. to 6s. 11d. per lb., Extra Fine, 6s. 11d. to 7s. per lb.; Calomel, 7s. 2d. to 7s. 3d. per lb.; Yellow Oxide, 7s. 8d. to 7s. 9d. per lb.; Persulph., B.P.C., 6s. 11d. to 7s. per lb.; Sulph. nig., 6s. 8d. to 6s. 9d. per lb. Special prices for larger quantities.

METHYL SALICYLATE.—1s. 3d. to 1s. 6d. per lb.

METHYL SULPHONAL.—8s. 9d. to 9s. per lb.

METOL.—9s. to 11s. 6d. per lb. British make.

PARA-FORMALDEHYDE.—1s. 9d. per lb. for 100% powder.

PARALDEHYDE.—1s. 4d. per lb.

PHENACETIN.—2s. 5d. to 2s. 8d. per lb.

PHENAZONE.—3s. 9d. to 4s. per lb.

PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.

POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—9½s. per cwt., less 2½ per cent.

POTASSIUM CITRATE.—B.P.C., 2s. 9d. to 3s. per lb.

POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.

POTASSIUM IODIDE.—16s. 8d. to 17s. 2d. per lb., according to quantity.

POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.

POTASSIUM PERMANGANATE.—B.P. crystals, 5½d. per lb., spot.

QUININE SULPHATE.—1s. 8d. to 1s. 9d. per oz., bulk in 100 oz. tins.

RESORCIN.—2s. 10d. to 3s. per lb., spot.

SACCHARIN.—47s. per lb.; in quantity lower.

SALOL.—2s. 3d. to 2s. 6d. per lb.

SODIUM BENZOATE, B.P.—1s. 8d. to 1s. 11d. per lb.

SODIUM CITRATE, B.P.C., 1911—2s. 6d. to 2s. 9d. per lb., B.P.C. 1923—2s. 10d. to 2s. 11d. per lb. U.S.P., 2s. 9d. to 3s. per lb., according to quantity.

SODIUM FERROCYANIDE.—4d. per lb., carriage paid.

SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 per ton, d/d consignee's station in 1-cwt. kegs.

SODIUM NITROPRUSSIDE.—16s. per lb.

SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—95s. to 100s. per cwt. Crystals, 4s. per cwt. extra.

SODIUM SALICYLATE.—Powder, 1s. 6½d. to 1s. 7d. per lb. Crystal, 1s. 7½d. to 1s. 8d. per lb.

SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 1d. per lb.

SODIUM SULPHITE, ANHYDROUS.—£27 10s. to £28 10s. per ton, according to quantity. Delivered U.K.

SULPHONAL.—6s. 6d. to 6s. 9d. per lb.

TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 3d. per lb.

THYMOL.—Puriss., 9s. 6d. to 9s. 9d. per lb., according to quantity. Firmer. Natural, 13s. 6d. per lb.

Perfumery Chemicals

ACETOPHENONE.—6s. 6d. per lb.

AUBEPINE (EX ANETHOL).—11s. per lb.

AMYL ACETATE.—2s. 6d. per lb.

AMYL BUTYRATE.—4s. 9d. per lb.

AMYL SALICYLATE.—2s. 9d. per lb.

ANETHOL (M.P. 21/22° C.).—5s. 3d. per lb.

BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.

BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb.

BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.

BENZYL BENZOATE.—2s. 3d. per lb.

CINNAMIC ALDEHYDE NATURAL.—15s. 6d. per lb.

COUMARIN.—9s. 6d. per lb.

CITRONELLOL.—13s. 6d. per lb.

CITRAL.—7s. 6d. per lb.

ETHYL CINNAMATE.—6s. per lb.

ETHYL PHTHALATE.—2s. 6d. per lb.

EUGENOL.—10s. per lb.

GERANIOL (PALMAROSA).—20s. per lb.

GERANIOL.—6s. 6d. to 11s. per lb.

HELIOTROPINE.—4s. 9d. per lb.

ISO EUGENOL.—14s. per lb.

LINALOL.—Ex Bois de Rose, 14s. per lb. Ex Shui Oil, 16s. per lb.

LINALYL ACETATE.—Ex Bois de Rose, 17s. 9d. per lb. Ex Shui Oil, 14s. 6d. per lb.

METHYL ANTHRANILATE.—8s. per lb.

METHYL BENZOATE.—4s. per lb.

MUSK KETONE.—34s. per lb.

MUSK XYLOL.—7s. per lb.

NEROLIN.—3s. 6d. per lb.

PHENYL ETHYL ACETATE.—11s. per lb.

PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.

RHODINOL.—40s. per lb.

SAFROL.—1s. 4d. per lb.

TERPINEOL.—1s. 6d. per lb.

VANILLIN.—16s. 6d. per lb.

Essential Oils

ALMOND OIL.—Foreign S.P.A., 10s. 6d. per lb.

ANISE OIL.—2s. 9d. per lb.

BERGAMOT OIL.—24s. per lb.

BOURBON GERANIUM OIL.—22s. per lb.

CAMPHOR OIL.—9d. per lb.

CANANGA OIL, JAVA.—12s. per lb.

CINNAMON OIL LEAF.—6s. 6d. per oz.

CASSIA OIL, 80/85%.—7s. per lb.

CITRONELLA OIL.—Java, 2s. 2d. per lb., c.i.f. U.K. port. Ceylon, pure, 2s. 2d. per lb.

CLOVE OIL (PURE 90/92%).—7s. 3d. per lb.

EUCALYPTUS OIL, AUSTRALIAN, B.P. 70/75%.—2s. per lb.

LAVENDER OIL.—Mont Blanc, 48/50%, Esters, 16s. 3d. per lb.

LEMON OIL.—15s. per lb.

LEMONGRASS OIL.—4s. per lb.

ORANGE OIL, SWEET.—20s. per lb.

OTTO OF ROSE OIL.—Anatolian, 35s. per oz. Bulgarian, 75s. per oz.

PALMA ROSA OIL.—12s. 6d. per lb.

PEPPERMINT OIL.—Wayne County, 16s. per lb.; Japanese, 9s. 3d. per lb.

PETITGRAIN.—8s. per lb. Sandalwood, Mysore, 28s. per lb., 95%, 16s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, October 18, 1928.

THE demand for chemicals during the current week has been fairly active, and the business transacted under present conditions must be regarded as satisfactory. Export trade is improving.

General Chemicals

ACETONE continues scarce and price is very firm at £75 to £77 10s per ton.

ACID ACETIC is unchanged.

ACID FORMIC stands at £45 per ton for 86% by weight, with a fair demand.

ACID OXALIC.—Price unchanged at £31 to £33 per ton, with quite a good demand.

ACID TARTARIC is very firm at 1s. 4½d., to 1s. 4¾d. per lb., with an upward tendency.

AMMONIUM CHLORIDE is unchanged at about £19 per ton.

ALUMINA SULPHATE continues extremely short, and price is now quoted at £6 15s. to £7 per ton, for 17/18%, iron free, with a rising tendency.

BARIUM CHLORIDE continues in short supply and the price is extremely firm at £11 5s. to £12 per ton, ex store, according to quantity and position.

COPPER SULPHATE.—The market is extremely firm at about £24 10s. to £25 per ton.

CREAM OF TARTAR is very firm at £98 10s. per ton, less 2½% for 99/100% B.P.

FORMALDEHYDE continues in good demand and price is unchanged at £39 per ton, ex wharf London.

LEAD ACETATE.—After being easy is now somewhat firmer at £42 10s. for white, and £41 10s. for brown.

LEAD NITRATE is firm at £36 10s. to £37 per ton, with a fair demand.

LIME ACETATE is unchanged.

METHYL ACETONE is in good demand at £58 to £60 per ton for 45% material.

POTASSIUM CARBONATE is in fair demand at £25 to £27 per ton for 96/98% material.

POTASSIUM CHLORATE is firm at £28 per ton.

POTASSIUM PERMANGANATE is firm at 5½d. to 5¾d. per lb. for B.P.

Supplies are inclined to be on the short side.

POTASSIUM PRUSSATE is without change at £63 10s. to £65 10s. per ton.

SODIUM ACETATE is scarce at £21 10s. to £22 per ton.

SODIUM PHOSPHATE is in good request at £12 to £13 per ton.

SODIUM PRUSSATE is firm at 4½d. to 5d. per lb., with a moderate demand.

TARTAR EMETIC is in fair demand at 10¾d. per lb.

ZINC SULPHATE.—Quite a fair volume of business is passing at the unchanged quotation of £11 10s. to £11 15s. per ton.

Coal Tar Products

THE market in general for coal tar products is quiet, and there is little change in the prices to report from last week.

MOTOR BENZOL remains firm at 1s. 6d. per gallon, on rails, naked.

SOLVENT NAPHTHA is very firm and practically no supplies are available, although there is very little inquiry. The price asked is 1s. 2½d. per gallon, naked, at makers' works.

HEAVY NAPHTHA remains firm at 1s. 1d. to 1s. 1½d. per gallon, on rails.

CREOSOTE OIL is unchanged, and can be obtained at 5½d. per gallon, f.o.r., in the North, and at 6½d. per gallon in London.

CRESYLIC ACID remains weak. The 98/100% quality being quoted at 2s. 2d. per gallon, f.o.b., and the dark quality 95/97% is quoted at 1s. 10d. per gallon, f.o.b., naked.

NAPHTHALENE remains firm, at £5 per ton for the 74/76 quality, and £6 per ton to £6 10s. per ton for the 76/78 quality.

PITCH remains unchanged with little buying interest. Prices are still around 40/- to 45/- f.o.b., with little or no demand.

Latest Oil Prices

LONDON, October 17.—LINSEED OIL was steady but quiet. Spot; ex mill, £29 15s.; October to April, £28 15s.; May-August, £29 and September-December, £29 10s., naked. RAPE OIL was quiet. Crude extracted, £40 10s.; technical refined, £42 10s., naked, ex wharf. COTTON OIL was steady. Egyptian crude, £30 10s.; refined common edible, £36; and deodorised, £38, naked, ex mill. TURPENTINE, inactive and od. per cwt. lower. American, spot, 42s.; November-December, 42s. 3d.; and January-April, 43s. 6d. per cwt.

HULL, October 17.—LINSEED OIL.—Spot and October, £29 12s. 6d.; November-December, £29 10s.; January to August, £29 5s.; per ton, naked. COTTON OIL.—Bombay crude, spot, £29 10s.; Egyptian crude, spot and November-December, £30; edible refined, spot and November-February, £33 15s.; technical, spot, £33 5s.; deodorised, spot, £35 15s. per ton, naked. PALM KERNEL OIL.—Crushed 5½ per cent., £37 10s. per ton, naked. GROUNDNUT OIL.—Crushed/extracted, £41 10s. per ton. SOYA OIL.—Extracted and crushed, £32 10s.; deodorised, £36. RAPE OIL.—Crude/extracted, £40 15s.; refined, £42 15s. per ton, net cash terms, ex mill. TURPENTINE, CASTOR OIL, and COD OIL unaltered.

Nitrogen Products

Sulphate of Ammonia.—The market remains firm at £9 8s. 9d. to £9 10s. per ton, f.o.b. U.K. port, in single bags, for prompt shipment. The demand continues satisfactory from the Far East. Reports from the Continent indicate that the consumption is on the increase. The home market continues quiet.

Nitrate of Soda.—Good sales at scale prices are reported in several countries. It is expected that the continental demand will equal that of last year, but so far it is difficult to give an estimate of the American position. No doubt the lower prices will tend to stimulate consumption. Whether this will absorb the whole of the new production remains doubtful.

SIR ROBERT HADFIELD will take the chair at the first Spiers Memorial Lecture to be given by Sir Oliver Lodge before the Faraday Society on Friday, November 9.

BRITISH TINTEX AND DYE PRODUCTS, LTD., has been formed to manufacture certain dyeing products, "Tintex," "Tintex Colour Remover" and "Whitex." The first is an easily applied dye for home use, the second a dye remover and the third a production for restoring whiteness to materials. An issue is being made of 580,000 shares of 5s. each.

South Wales By-Products

AN uncertain tendency continues to be a feature of South Wales by-product activities. There is a better inquiry, but business is slow in maturing. Values, in most cases, are steady. Pitch, which is being quoted at from 45s. to 50s. per ton prompt delivery, has a good but not brisk demand, while refined tars have a moderate call. Prices are unchanged, gasworks' tar changing hands at from 7½d. to 7¾d. per gallon delivered, and coke oven tar at from 7½d. to 8d. per gallon delivered. Crude naphthalene is unchanged round the 80s. to 85s. per ton mark, and has only a small demand. Whizzed remains quiet round about the 95s. to 100s. per ton. Patent fuel exports decreased last week by over 12,000 tons, but there was an increase of about 2,000 tons in coke exports. Vales are unchanged, patent fuel selling at from 20s. 6d. to 21s. 6d., ex-ship, Cardiff, and 19s. 6d. to 19s. 9d. ex-ship, Swansea. Coke, foundry, from 25s. to 36s. 6d. per ton; furnace, 19s. to 20s. per ton; foundry, at ovens, 27s. 6d. to 33s. per ton; furnace, at ovens, 19s. to 20s. per ton.

Protection to Indian Chemical Industry

IN a letter to the Government of India regarding protection to chemical industry in India, the Indian Merchants' Chamber declares that the necessity of making heavy chemicals in the country to meet the country's demands must be the prevailing reason for a grant of protection. The need of protection further arises from the fact that the manufacture of explosives, which requires large quantities of acid, is reserved by the Government as a State industry. If public chemical companies of recognised status were allowed to manufacture all the chemicals required for national defence, such as explosives, disinfectants, fuels, pharmaceuticals, drugs and fertilisers, a larger production of chemicals would be possible. The Chamber pleads for a revision of the policy of the Government in the matter, and suggests that protection might take the form of an embargo on the export of raw materials and ores.

The Indian Tariff Board has recommended the grant of protection to the Indian match industry. It suggests the maintenance of the present duty and its conversion into a protective duty. The Government of India will introduce legislation in the matter in the next session of the Assembly.

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinion.

Glasgow, October 17, 1928

THE heavy chemical market has been quieter during the last week, although the amount of inquiry going around, particularly for export, has been better. Prices show little or no change, but citric acid is still advancing, to-day's quoted price being 2s. 8d. per lb., ex wharf.

Industrial Chemicals

- ACETONE, B.G.S.—Nominally £74 10s. to £77 10s. per ton, ex wharf, according to quantity, but very little available for immediate delivery.
- ACID ACETIC, 98/100%.—Glacial, £56 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.
- ACID BORIC.—Crystals, granulated or small flakes, £30 per ton. Powder, £32 per ton, packed in bags, carriage paid U.K. stations.
- ACID CARBOLIC, ICE CRYSTALS.—Price maintained at 6½d. per lb., delivered or f.o.b. U.K. ports, in moderate demand.
- ACID CITRIC, B.P. CRYSTALS.—Very scarce for prompt delivery, and nominally 2s. 8d. per lb., less 5%, ex wharf.
- ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. per carboy. Dearsenicated quality, 5s. 6d. per carboy, ex works, full wagon loads.
- ACID NITRIC, 80%.—£24 10s. per ton, ex station, full truck loads.
- ACID OXALIC, 98/100%.—On offer from the Continent at 3½d. per lb., ex wharf. Spot material quoted 3½d. per lb., ex store. In better demand.
- ACID SULPHURIC.—£2 15s. per ton, ex works, for 144° quality; £5 15s. per ton for 168° quality. Dearsenicated quality, 20s. per ton extra.
- ACID TARTARIC, B.P. CRYSTALS.—Quoted 1s. 4½d. per lb., less 5% ex wharf. Offered for prompt shipment at 1s. 4d. per lb., less 5%, ex wharf.
- ALUMINA, SULPHATE.—On offer at £5 10s. per ton, c.i.f. U.K. ports. Spot material quoted £5 15s. per ton, ex store.
- ALUM, LUMP POTASH.—Quoted £8 7s. 6d. per ton, c.i.f. U.K. ports. prompt shipment from the Continent. Crystal meal quoted £8 10s. per ton, ex store.
- AMMONIA, ANHYDROUS.—Quoted 9½d. per lb., carriage paid. Containers extra, and returnable.
- AMMONIA CARBONATE.—Lump, £37 per ton. Powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.
- AMMONIA, LIQUID, 880°.—Unchanged at about 2½d. to 3d. per lb., delivered, according to quantity.
- AMMONIA MURIATE.—Grey galvanisers' crystals of British manufacture quoted £21 to £22 per ton, ex station. Fine white crystals offered from the Continent at about £17 5s. per ton, c.i.f. U.K. ports.
- ANTIMONY OXIDE, 98/100%.—On offer for prompt shipment from China at £39 10s. per ton, ex wharf.
- ARSENIC, WHITE POWDERED.—Quoted £18 10s. per ton, ex wharf. prompt despatch from mines. Spot material on offer at £19 15s. per ton, ex store.
- BARIUM CARBONATE, 98/99%.—Continental material quoted £10 per ton, c.i.f. U.K. ports. English material available at about £11 per ton, ex store.
- BARIUM CHLORIDE.—Now quoted £9 15s. per ton, c.i.f. U.K. ports, prompt shipment from the Continent. Spot material on offer at £11 5s. per ton, ex wharf.
- BLEACHING POWDER.—British manufacturers' contract price to consumers, £6 12s. 6d. per ton, delivered, minimum 4-ton lots. Continental on offer at £6 10s. per ton, ex wharf.
- CALCIUM CHLORIDE.—British manufacturers' price, £4 5s. to £4 15s. per ton, according to quantity and point of delivery. Continental material on offer at £3 12s. 6d. per ton, c.i.f. U.K. ports.
- COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports for export.
- COPPER SULPHATE.—Some spot material available at about £24 per ton, ex store.
- FORMALDEHYDE, 40%.—Quoted £35 10s. per ton, c.i.f. U.K. ports. Spot material on offer at £38 per ton, ex store.
- GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.
- LEAD, RED.—On offer at £29 10s. per ton, ex store.
- LEAD, WHITE.—Quoted £36 10s. per ton, c.i.f. U.K. ports.
- LEAD, ACETATE.—White crystals quoted £41 15s. per ton, ex store. Brown on offer at about £40 per ton, ex store.
- MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.
- METHYLATED SPIRIT.—Industrial quality, 64 O.P., quoted 1s. 4d. per gallon, less 2½%, delivered.
- POTASSIUM BICHROMATE.—4½d. per lb. delivered, minimum 4-ton lots. Under 4-ton lots, ½d. per lb. extra.
- POTASSIUM CARBONATE, 96/98%.—Offered from the Continent at £25 per ton, c.i.f. U.K. ports. Spot material available at £26 per ton, ex store.
- POTASSIUM CHLORATE, 99½/100%.—Powder.—Quoted £23 per ton, c.i.f. U.K. ports. Crystals, 20s. per ton extra.
- POTASSIUM NITRATE.—Refined granulated quality quoted £19 2s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at about £20 10s. per ton, ex store.
- POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 5½d. per lb., ex wharf.
- POTASSIUM PRUSSIAN (YELLOW).—Offered from the Continent at 6½d. per lb., ex wharf, prompt shipment. Spot material quoted 6½d. per lb., ex store.
- SODA HYPOSULPHITE.—Large crystals of English manufacture quoted £8 17s. 6d. per ton, ex station, minimum 4-ton lots. Pea crystals on offer at £14 15s. per ton, ex station, minimum 4-ton lots.
- SODIUM ACETATE.—On offer for prompt delivery at about £21 5s. per ton, ex store.
- SODIUM BICARBONATE.—Refined recrystallised, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.
- SODIUM BICHROMATE.—Quoted 3d. per lb. delivered buyers' works, minimum 4-ton lots. Under 4 and over 2-ton lots, 1/16d. per lb. extra. Under 2-ton lots, 3½d. per lb.
- SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station. Powdered or pea quality, 27s. 6d. per ton extra. Light soda ash, £7 3s. 9d. per ton, ex quay, minimum 4-ton lots with various reductions for contracts.
- SODIUM CAUSTIC.—Powdered, 98/99%, £17 17s. 6d. per ton; solid, 76/77%, £14 10s. per ton, and 70/72% £13 12s. 6d. per ton, minimum 4-ton lots, carriage paid, on contract. Spot material, 10s. per ton extra.
- SODIUM NITRATE.—Quoted £10 2s. per ton, carriage paid buyers' station for ordinary quality. Refined quality, 2s. 6d. to 5s. per ton extra.
- SODIUM NITRITE, 100%.—In moderate demand. Spot material quoted 4½d. per lb., ex store.
- SODIUM SULPHATE (SALTCAKE).—Price 50s. per ton, ex works; 52s. 6d. per ton delivered for unground quality. Ground quality, 2s. 6d. per ton extra.
- SODIUM SULPHIDE.—Prices for home consumption:—Solid, 60/62%, £9 per ton; broken, 60/62%, £10 per ton; crystals, 30/32%, £7 2s. 6d. per ton, delivered buyers' works on contract, minimum, 4-ton lots. Special prices for some consumers. Spot material 5s. per ton extra.
- SULPHUR.—Flowers, £12 per ton; roll, £10 15s. per ton; rock, £10 12s. 6d. per ton; ground American, £9 5s. per ton; ex store.
- ZINC CHLORIDE, 98%.—British material now quoted £22 10s. per ton, f.o.b. U.K. ports.
- ZINC SULPHATE.—Offered from the Continent at about £10 5s. per ton, ex wharf.

NOTE.—The above prices are for bulk business and are not to be taken as applicable to small parcels.

Burmese Tung Oil Industry

THE Burma Government desires to encourage the tung oil industry. The oil is obtained from the two species *Aleuritis Fordii* and *Aleuritis Montana*. The fruit of the tree produces a seed which is rich in an oil, known as tung oil, which is of great importance in the preparation of varnishes for motor car bodies and for other purposes, the present annual consumption in the United States being about 40,000 tons. The present chief source of supply is China, but Burma can become one, and that is why Government there is encouraging the plantation of the Tung trees and the associated oil industry. Experiments have shown that young trees respond quickly to light applications of nitrate of soda or of Peruvian guano up to 1 lb. per tree. The cake which results from pressing the seed has a high value as a fertiliser, on account of its nitrogen, phosphoric acid, and potash content.

Manchester Chemical Market

(FROM OUR OWN CORRESPONDENT.)

Manchester, October 18, 1928.

So far as the majority of sections of the chemical products market are concerned, there has been little appreciable alteration in conditions compared with a week ago. Most lines remain very steady, with here and there, due to pronounced scarcity of spot supplies, a tendency for prices to creep up. A moderate trade has been reported this week in a number of the bread-and-butter products and inquiries are fairly numerous although, as before, relating to comparatively small parcels.

Heavy Chemicals

Interest in chlorate of soda has been a shade more active than of late and values are held at from about 2½d. per lb. In the case of hyposulphite of soda only a relatively quiet business has been reported this week, with current offers of the photographic grade at from £15 5s. to £15 10s. per ton and of the commercial product at about £9. Contract deliveries of caustic soda are being called for fairly regularly and prices are firm at from £13 7s. 6d. to £15 7s. 6d. per ton, according to quality. There has not been a great deal of inquiry about for sulphide of sodium but at £7 15s. to £8 per ton for the commercial material and about £9 10s. for the 60-65 per cent. concentrated solid, quotations are steady. Bichromate of soda continues to attract a fair amount of attention at from 3d. to 3½d. per lb. Prussiate of soda is well held at from 4½d. to 5½d. per lb., according to quantity, a quietly steady business being put through. Saltcake is unchanged at round £2 12s. 6d. per ton in contract parcels, a fair inquiry for this material being reported. With regard to phosphate of soda, this is in moderate request at a steady range of prices, these varying from £12 5s. to £12 10s. per ton. Both alkali and bicarbonate of soda are moving off in fairly satisfactory quantities at firm prices, the former at round £6 2s. 6d. per ton and the latter on the basis of £10 10s. per ton. There is a quiet demand about for bleaching powder, offers of which are at £6 10s. to £7 per ton.

Among the potash products, yellow prussiate continues to come in for a fair amount of attention from buyers, and quotations in this section are fully maintained at from 6½d. to 7½d. per lb., according to quantity. Only a comparatively small business is passing in permanganate of potash but, if anything, the tendency seems to be upward, B.P. material being currently quoted at about 5½d. per lb. and commercial quality at 5d. The demand for chlorate of potash is of moderate extent and at from 2½d. to 3d. per lb. values are much the same as at last report. Bichromate of potash keeps steady at 4½d. per lb. and is a fairly active section. Caustic potash is selling in regular quantities and quotations are firm on the basis of £33 5s. per ton for prompt delivery of one to five-ton lots. Carbonate of potash is in moderate request, with current offers at round £25 per ton.

Inquiry for arsenic on this market is on much the same quiet scale as before and prices are being shaded, about £16 10s. per ton, on rails, for white powdered, Cornish makes, being quoted this week. Sulphate of copper is firm at up to £25 10s. per ton, f.o.b., and a fair trade in this material is being done. Not a great deal of interest is being displayed in acetate of lead but there seems to be no fresh weakness developing, white being on offer at about £40 10s. per ton, and brown at £39. Nitrate of lead is quiet at from £34 to £35 per ton. A fair business is passing in acetate of lime at firm prices, with grey quality obtainable at £16 10s. per ton and brown at £9.

Acids and Tar Products

The supply position in the case of citric acid is not appreciably easier than it has been during the past few weeks and values are firm at about 2s. 8d. per lb. Tartaric acid is steady and in moderate request at 1s. 4½d. per lb. With regard to acetic acid, a quietly steady trade is passing at about £36 per ton for 80 per cent. commercial and £66 10s. for glacial. There is a limited inquiry about for oxalic acid at about 3½d. per lb.

Among the by-products, the tendency in the case of pitch is still easy at £2 per ton, f.o.b., with relatively little business being done. Creosote oil is also in quiet demand at 6d. to 6½d. per gallon. Carbolic acid keeps steady and is fairly active, with crystallised material at 6½d. per lb.

Canadian Fertiliser Requirements

THE Dominion Bureau of Statistics has recently conducted, in co-operation with the Department of Agriculture, a survey of the fertiliser trade in Canada. Canada's fertiliser requirements are so far relatively small, and over large areas, the use of agricultural fertilisers is practically non-existent. The survey discloses that sales of fertiliser to consumers for use in Canada during the twelve months from July 1, 1926, to June 30, 1927, aggregated 169,564 tons. In view of the fact that the area sown each year to field crops totals about 56,000,000 acres, the amount of fertiliser used by Canadian farmers works out at an average of only 6 lb. per acre. The review gives, however, some interesting information as to the kinds of fertiliser adopted by those Canadian farmers who are accustomed to make use of chemical manures. During the year under review, 64,423 tons or 38 per cent. of the total were "mixed fertilisers" containing two and usually three of the primary fertiliser materials, nitrogen, phosphoric acid, and potash. Of 128 mixed fertilisers on the market, 98 contained all three of these plant foods, and these accounted for 90 per cent. of the sales in this class. The report points out that mixed fertilisers are sold in Canada under Government supervision with a label on every bag showing the guaranteed analysis of the product. Ranking next to the mixed fertilisers is acid phosphate, with domestic sales aggregating 56,715 tons or 33 per cent. of the total. Basic slag and muriate of potash each accounted for between 7 and 8 per cent., nitrate of soda for 5 per cent., and sulphate of ammonia for 4 per cent. Bone meal and tankage each exceeded one per cent. of the total and fish meal 0.6 per cent., the quantity of this last being 1,021 tons. Ten other fertilisers were used in still smaller amounts. The survey of the fertiliser trade in Canada discloses 68 concerns marketing fertiliser and fertiliser materials direct to the consumer. Thirty-four of these operated manufacturing establishments, and in addition to domestic sales, 85,074 tons of fertiliser materials were sold for export, mostly cyanamide, ammonium sulphate, acid phosphate, and tankage.

Miscellaneous Chemical Products Produced in Canada

THE Dominion Bureau of Statistics at Ottawa has just issued figures relative to the production of factories in Canada producing certain miscellaneous chemicals, including adhesives, baking powder, boiler compounds, celluloid and artificial leather products, flavouring extracts, insecticides, polishes and dressings, sweeping compounds, etc. The total value of the year's production of these articles reached \$11,900,521 as compared with an output worth \$11,851,164 in 1926. In 1927 there were 125 operating plants in these industries distributed by Provinces as follows:—65 in Ontario; 43 in Quebec; 3 in New Brunswick; 1 in Nova Scotia; 5 in Manitoba; 3 in Alberta; 1 in Saskatchewan; and 4 in British Columbia. Capital employed in these plants totalled nearly 9.9 million dollars; employment was given to an average of 1,872 people the round, and raw materials costing \$5,414,310 were converted into commodities having a selling value of \$11,900,521. Payments in salaries and wages amounted to \$2,321,655. By groups, the output values were as follows: Adhesives, \$1,934,240; baking powder, \$2,613,737; boiler compounds, \$261,167; celluloid products, \$2,063,307; flavouring extracts, \$1,821,374; insecticides, \$711,850; sweeping compounds, \$80,437; polishes and dressings, \$1,422,111; and miscellaneous chemical products, \$992,298. These figures do not indicate commodity production for the substances named, but represent the output values of firms making these articles as their major products.

Reduction of Magnetite by Iron Sulphide

AN investigation of the rate of reduction of magnetite by ferrous sulphide has been completed by the United States Bureau of Mines. The results show that pure magnetite is reduced to some extent by ferrous sulphide at temperatures as low as 1,000° C. and that the reduction may become almost complete in two hours' time at 1,300° C. if there is a considerable excess of sulphide and if sulphur dioxide, sulphur trioxide, and elemental sulphur reaction products are removed as fast as formed. When these products are allowed to accumulate, the rate of reduction is lowered.

Company News

BURMAH OIL Co.—An interim dividend of 10 per cent. is announced on account of the year ending December 31, 1928.

NEUCHÂTEL ASPHALTE Co.—The board has decided to declare an interim dividend on account of the current year of 6d. per ordinary share, less income-tax, payable on November 15.

HARBEN'S (VISCOSE SILK MANUFACTURERS).—A dividend was paid on October 1 for the half year ended April 30, 1928, at the fixed rate of 8 per cent. on the first cumulative participating preference shares, i.e., 4 per cent. on the shares numbered 1 to 250,000 and 3.9 per cent. on shares numbered 250,001 to 390,000.

SADLER AND Co.—For the year ended June 30 last, the report states that the profit after charging income-tax, etc., amounts to £15,639, and undivided balance brought from last year was £5,605, making £21,244. The directors have set aside for depreciation £5,000. It is proposed paying a final dividend of 4 per cent., less income-tax (making 7 per cent. for year), carrying forward £6,778.

IMPERIAL CHEMICAL INDUSTRIES.—The directors have declared an interim dividend of 3 per cent., less tax, on the ordinary shares, the dividend to be payable on December 1 to shareholders on the register at October 17. Under the terms of the recent issue of new ordinary shares these shares will rank for this dividend from July 1 last "calculated on the amount per share by way of capital credited as paid up and from the due dates of the instalments." This right will be satisfied by the payment of a dividend of 2.687205d. gross per £1 share.

MAJOR AND Co.—The report for the year ended March 31, 1928, states that the balance of profit and loss appropriation account, after making all adjustments, is £4,253. Out of this dividend has been paid of 6 per cent. on 6 per cent. cumulative preference shares for the year, leaving a balance to go forward of £1,253. Since the last meeting capital has been written down in accordance with resolutions passed by shareholders at extraordinary meetings. Under the terms of rearrangement, dividends on all classes of shares other than 6 per cent. preference shares were cancelled up to March 31, 1928.

RIO TINTO Co.—Out of the estimated profits of the year 1928, the directors have declared an interim dividend of 15s. per share on the ordinary shares, as compared with 20s. per share in October last year; also the usual interim dividend of 2s. 6d. per share on the 5 per cent. preference shares. Both the dividends are payable on and after November 1 next, less income-tax. It is pointed out that as foreshadowed in the intimation to the shareholders of May 16 last, the company has to make heavy payments to the Spanish Government for arrears of taxes for the years 1922-25 inclusive.

AMERICAN SMELTING AND REFINING Co.—A statement of consolidated income account of American Smelting and Refining Co. and its subsidiaries shows that after deducting bond interest, depreciation, obsolescence, ore depletion, taxes (including estimated United States and Mexican income taxes), and dividends for six months amounting to \$1,750,000 on preferred stock, company earned upon the common stock \$6,469,451, or \$10.60½ per share for the six months' period, which is at the rate of \$21.21 per year, as compared with \$15,477,769 for year 1927, which was at rate of \$19.64 per annum.

RUTHS STEAM STORAGE, LTD.—At an extraordinary general meeting, held in London on October 11, resolutions were carried unanimously, increasing the capital from £300,000 to £500,000 by the creation of 200,000 additional "A" shares. Mr. F. E. Powell, the chairman, said that the new capital was required to finance additional rights and to form and operate subsidiary companies. Of the new "A" ordinary shares it was proposed to issue only 150,000 at present. It was not intended to make any public offer, and no brokerage or underwriting fees were to be paid. The present shareholders were being given the privilege of subscribing for one new share at 25s. for every four shares held; 60,000 shares had been applied for by important groups at the same price, and the remaining 20,000 were being reserved for a strong industrial group whose interests were reciprocal to their own and who would undoubtedly provide a sales outlet of the highest importance.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal" have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CAUSTIC SODA BLEACHING POWDER, SULPHURIC ACID.—An agent established in Cairo desires to obtain the representation of British manufacturers of the above products. (Reference No. 339).

AMYL ALCOHOL, BUTYROMETERS.—The Office of the Government Buyer, Pretoria, is calling for tenders by November 22, for the supply of the following requirements (Tender No. 13,865): Gerber fucoma milk testers; milk sample bottles; butyrometers; pipettes (for Gerber method); patent lock-stoppers for butyrometers; brushes for butyrometers and pipettes; floating dairy thermometers; amyl alcohol; lactometers. (Reference No. B.X. 4797).

Production and Shipment of Sodium Nitrate

THE production of nitrate of soda in Chile during the first six months of 1928 amounted to 1,502,834 metric tons, states the *American Fertiliser*. Shipments to foreign markets for the same period reached 1,342,406 metric tons. There were 64 plants in operation at the end of June. Shipments were distributed as follows:—

COUNTRY.	METRIC TONS.
Germany	14,045
Argentina	548
Australia	4,439
Panama	5
Bolivia	20
Brazil	3,251
Cuba	101
China	660
Canada	1,219
Egypt	68,066
Scandinavia	4,617
Uruguay	100
Spain	1,016
United States (East Coast)	671,366
United States (West Coast)	24,729
Hawaii	35,817
France	18,420
Netherlands	4,833
India	301
Italy	1,016
Japan	17,780
South Africa	8,382
Countries of the Mediterranean	3,556
Mexico	50
New Zealand	838
Peru	1,828
Great Britain (direct Ports)	12,705
Great Britain or Continent (for orders)	31,787
Russia	10,903

Measuring the Temperature of Flames

FLAMES produced by the combustion of gases and vapours are used in many industrial operations such as cooking, heating, and motive power for automobiles. The efficiency of flames in doing their work is often related closely to their temperature, but up to the present there have been few actual measurements of the temperature of flames. The flame laboratory of the Pittsburgh Experiment Station of the United States Bureau of Mines is making direct measurements of the temperature of flames in connection with a study of the physics and chemistry of combustion and explosion. It has been found that the brightness of a flame coloured yellow with sodium chloride vapour is directly proportional to the flame temperature and in the method employed at the Bureau of Mines laboratory the intensity of this light is compared in a spectroscopic with light from a tungsten band heated to a known temperature. Measurements have been made on flames of natural gas, methane, propane, and carbon monoxide, and the work is being extended to include all the commonly used gases and vapours, mixed both with air and with oxygen, and in different types of burners.

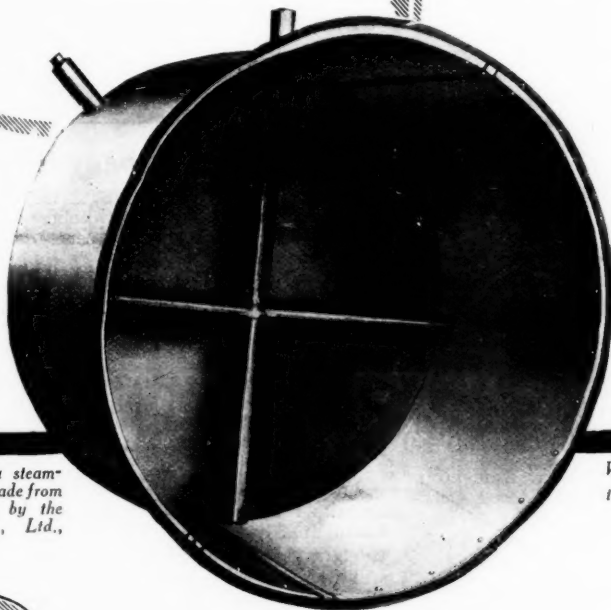
FIRTH STAYBRITE

when in its correctly Heat-treated condition has such a wide range of resistance to the attacks of acid and corrosive media that in this respect it is

SECOND ONLY TO
GOLD AND PLATINUM

PLANT and vessels made from Firth Staybrite possess remarkable qualities of resistance to corrosive influences even after the various fabricating operations. Final application of the recommended heat treatment (cooling in air or water from 1,100° or 1,200° Centigrade) will, however, considerably enhance their qualities of resistance to a still wider range of chemicals. Full technical information on the subject of final heat treatment will gladly be tendered upon request

FIRTH STAYBRITE



The photograph shows a steam-heated Chemical Tank made from Firth Staybrite Steel, by the Roto Engineering Co., Ltd., Bradford.

Write for Booklet III, on the subject dealing with the possibilities and uses of Firth Staybrite Steel



THOS. FIRTH & SONS, LIMITED

NORFOLK WORKS, SHEFFIELD, ALSO AT BLACKHEATH N^r BIRMINGHAM.

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

SMITH, Harold Henry, and SMITH, John James Edward, 3, Holbrook Road, Stratford, glycerine extractors. (C.C., 20/10/28.) £17 15s. 7d. August 30.

BRYTE, LTD., 8, Red Lion Square, W.C., manufacturing chemists. (C.C., 20/10/28.) £19 10s. 7d. September 11.

SMALL, LTD., 178, Aston Road, Birmingham, mica merchants. (C.C., 20/10/28.) £27 11s. September 11.

Deed of Arrangement

[The following deeds of arrangement with creditors have been filed under the Deeds of Arrangement Act, 1914. Under this Act it is necessary that private arrangements other than those executed in pursuance of the Bankruptcy Act shall be registered within seven clear days after the first execution by the debtor or any creditor. These figures are taken from the affidavit filed with the registered deed, but may be subject to variation on realization.]

NEVILLE, Sydney Edward, 246, Temple Chambers, Temple Avenue, E.C., CROWE, Douglas Valentine, Heatherlea, Worcester Park, and MALCOLM, James Douglas, 7, Charles Street, Knightsbridge, and trading at Dunster House, Mincing Lane, E.C., as S. E. NEVILLE AND CO., jute and shellac merchants. (D.A., 20/10/28.) Dated October 2, filed October 9. Trustee, J. E. Myers, Trafalgar Buildings, Northumberland Avenue, W.C., C.A. Liabilities unsecured, £19,737; assets, less secured claims, £1,788. Separate estate of S. E. Neville: secured creditors, £500; liabilities unsecured, £15,844; assets, less secured claims, £170. Separate estate of D. V. Crowe: secured creditors, £960; liabilities unsecured, £5,562; assets, less secured claims, £1,310. Separate estate of J. D. Malcolm: liabilities unsecured, £6,815; assets, less secured claims, £1,607.

Mortgages and Charges

[NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case, the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.]

BLYTON, ASTLEY AND CO., LTD., Lower Broughton, manufacturing chemists. (M., 20/10/28.) Registered October 1, £4,240 debentures; general charge.

OCEAN CHEMICAL CO., LTD., Ramsbottom. (M., 20/10/28.) Registered October 4, £7,000 (not ex.), further charge (additional to amount secured by debenture dated August 25, 1926), to Martins Bank, Ltd.; charged on property comprised in debenture dated August 25, 1926. *£15,000 debentures. May 5, 1928.

Satisfaction

LIVER GREASE OIL AND CHEMICAL CO., LTD., Liverpool. (M.S., 20/10/28.) Satisfaction registered October 5, £500, part of amount registered May 20, 1921.

Receiverships

FARRAR AND CO. (HONLEY), LTD., L. Netherwood, of Crescent Buildings, Half Moon Street, Huddersfield, ceased to act as Receiver or Manager on October 8, 1928.

JARED, TERRETT, HUNT AND SON, LTD., E. Turner, of 32, Queen Victoria Street, E.C.4, ceased to act as Receiver or Manager on June 30, 1928. (Notice filed October 11.)

JONES (MEXBOROUGH), LTD. (R., 20/10/28.) C. P. Tiptaft, C.A., of 1, Cliff Street, Mexborough, was appointed Receiver and Manager on October 2, 1928, under powers contained in debenture dated October 5, 1926.

NATIONAL DYES, LTD. (R., 20/10/28.) C. J. Comins, of 50, Cannon Street, E.C.4, was appointed Receiver and Manager on October 3, 1928, under powers contained in mortgage debenture dated March 9, 1920.

London Gazette, &c.

Companies Winding Up Voluntarily

BRITISH SOMALILAND MICA SYNDICATE, LTD. (C.W.U.V., 20/10/28.) At an extraordinary general meeting of the members of the above named company, duly convened, and held at 8, Stone Buildings, Lincoln's Inn, in the city of London, on September 12, 1928, the following special resolution was duly passed; and at a subsequent extraordinary general meeting of the members of the said company, also duly convened, and held at the same place on October 3, 1928, the following special resolution was duly confirmed: "That the company be wound up voluntarily, and that Arthur Thomas Cooper, consulting engineer, of 8, Stone Buildings, Lincoln's Inn, London, W.C.2, and Ernest Harper Stringer, chartered accountant, of 8, Queen Street, London, E.C.4, be and they are hereby appointed liquidators for the purpose of such winding-up."

VANORE, LTD. (C.W.U.V., 20/10/28.) At an extraordinary general meeting of the members of the above named company, duly convened, and held at 93, Mortimer Street, London, W.1, on October 3, 1928, the following extraordinary resolution was duly passed:—"That the company cannot, by reason of its liabilities, continue its business, and that it is advisable for same to be wound up in voluntary liquidation." That Mr. W. Foulshaw Baker, of 93, Mortimer Street, London, W.1, be and he is hereby appointed liquidator for the purpose of such winding-up." Meeting of creditors at the offices of the liquidator, on Monday, October 22, at 2.30 p.m.; creditors' claims by November 30.

New Company Registered

UNITED MATCH INDUSTRIES, LTD.—Registered as a "public" company on October 11. Nominal capital, £175,000, in 150,000 8 per cent. cumulative participating preferred ordinary shares of £1 each and 500,000 deferred ordinary shares of 1s. each. Manufacturers, exporters and importers of and dealers in matches, fuses, lights, self-lighters and all other articles in connection with which ignition is obtained and their ingredients, chemical merchants, etc. Directors: Lt.-Col. Sir Alan H. Burgoyne, Finchers House, Amersham, Bucks (chairman); W. H. Fordham, M. Gray, H. A. Beale, Sir Edgar J. Holberton, H. R. Goddard.

Japanese Demand for Ammonium Sulphate

DURING 1927, 140,000 of German and 40,000 tons of British ammonium sulphate were imported into Japan, but it is thought that during the present year the German proportion will decrease, and that imports from Great Britain will amount to 80,000 tons. According to the *Chemiker-Zeitung*, the reason for this change is to be seen in the varying marketing methods adopted. The Germans work through agents, who take a commission of about 2.5 yen, thus increasing the cost of the goods, the British deal directly with the consumer, and are thus able to sell more cheaply. Competition is, however, coming from Japan itself, the production of ammonium sulphate in that country in 1928 being estimated at 180,000 tons. The Japanese manufacturers are endeavouring to retain in their hands the markets of Korea and Formosa, and are educating the people of those districts in the value of synthetic fertilisers. In Korea, 30,000 tons of ammonium sulphate were used in 1927, and it is estimated that the total for the current year will be 50,000 tons.

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